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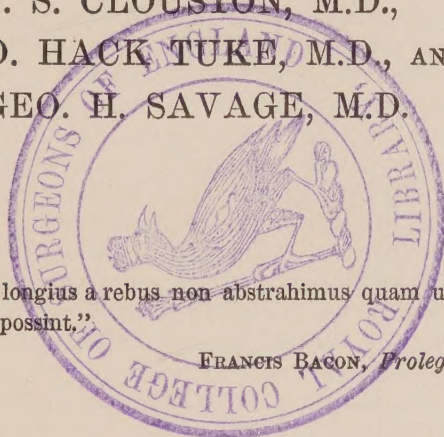
OF

MENTAL SCIENCE

(Published by Authority of the Medico-Psychological Association).

EDITED BY

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“Nos vero intellectum longius a rebus non abstrahimus quam ut rerum imagines et radii (ut in sensu fit) coire possint.”

FRANCIS BACON, *Proleg. Instaurat. Mag.*

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MDCCCLXXIX.

"IN adopting our title of the *Journal of Mental Science*, published by authority of the *Medico-Psychological Association*, we profess that we cultivate in our pages mental science of a particular kind, namely, such mental science as appertains to medical men who are engaged in the treatment of the insane. But it has been objected that the term mental science is inapplicable, and that the terms, mental physiology, or mental pathology, or psychology, or psychiatry (a term much affected by our German brethren), would have been more correct and appropriate; and that, moreover, we do not deal in mental science, which is properly the sphere of the aspiring metaphysical intellect. If mental science is strictly synonymous with metaphysics, these objections are certainly valid, for although we do not eschew metaphysical discussion, the aim of this Journal is certainly bent upon more attainable objects than the pursuit of those recondite inquiries which have occupied the most ambitious intellects from the time of Plato to the present, with so much labour and so little result. But while we admit that metaphysics may be called one department of mental science, we maintain that mental physiology and mental pathology are also mental science under a different aspect. While metaphysics may be called speculative mental science, mental physiology and pathology, with their vast range of inquiry into insanity, education, crime, and all things which tend to preserve mental health, or to produce mental disease, are not less questions of mental science in its practical, that is, in its sociological point of view. If it were not unjust to high mathematics to compare it in any way with abstruse metaphysics, it would illustrate our meaning to say that our practical mental science would fairly bear the same relation to the mental science of the metaphysicians as applied mathematics bears to the pure science. In both instances the aim of the pure science is the attainment of abstract truth; its utility, however, frequently going no further than to serve as a gymnasium for the intellect. In both instances the mixed science aims at, and, to a certain extent, attains immediate practical results of the greatest utility to the welfare of mankind; we therefore maintain that our Journal is not inaptly called the *Journal of Mental Science*, although the science may only attempt to deal with sociological and medical inquiries, relating either to the preservation of the health of the mind or to the amelioration or cure of its diseases; and although not soaring to the height of abstruse metaphysics, we only aim at such metaphysical knowledge as may be available to our purposes, as the mechanician uses the formularies of mathematics. This is our view of the kind of mental science which physicians engaged in the grave responsibility of caring for the mental health of their fellow men, may, in all modesty, pretend to cultivate; and while we cannot doubt that all additions to our certain knowledge in the speculative department of the science will be great gain, the necessities of duty and of danger must ever compel us to pursue that knowledge which is to be obtained in the practical departments of science, with the earnestness of real workmen. The captain of a ship would be none the worse for being well acquainted with the higher branches of astronomical science, but it is the practical part of that science as it is applicable to navigation which he is compelled to study."—*J. C. Bucknill, M.D., F.R.S.*

THE JOURNAL OF MENTAL SCIENCE.

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PART 1.—ORIGINAL ARTICLES.

The Measure of Individual and Social Responsibility in Criminal Cases. In Two Chapters. By DAV. NICOLSON, M.D., Deputy Superintendent, State Criminal Lunatic Asylum, Broadmoor; formerly Senior Medical Officer, H.M. Convict Prison, Portsmouth.

CHAPTER 1.

At noon, on Tuesday, the 15th of January last, Mr. Eugène Hamburger met, in the busy Metropolitan thoroughfare, "Holborn Viaduct," a jewel dealer, named Jackson, with whom he had some slight business acquaintance. With the view of exhibiting his wares, Hamburger consented to accompany the dealer into an as yet unoccupied office of the latter on the Viaduct. Upon entering the room, Hamburger was about to take a parcel of pearls from his bag, when Jackson fired a pistol at him, wounding him in the head, and afterwards continued the assault by drawing a dagger and stabbing him. In the struggle that ensued, Hamburger succeeded in overpowering and disarming his assailant, who escaped from the room and disappeared. The wounded man thereafter proceeded home in a cab, and recovered from his injuries.

Five days afterwards, Jackson turned up at the "Swan" public-house, at Falmer, near Brighton, ate a hearty dinner, went to the afternoon service in the church, and, later on, shot himself through the heart in the churchyard, where he was found, dead.

These are the bare facts of a case of attempted homicide, followed by the self-destruction of the would-be murderer.

From the evidence brought forward at the inquest, it appears that Jackson bore an excellent character. A fellow-lodger, who had known him for the previous nine months,

“deposed that he was temperate in his habits, but strange and eccentric; that he had often complained of severe pains in the head; that he was in no want of money; that he was in the habit of going about armed; and that he had frequently talked about having been grossly insulted,” and further that he did not believe that Jackson intended to rob Hamburger.

The following statements, written by the deceased, were found in his pocket-book, and read at the inquest:—

To my friends, my dear parents and sisters,—I have journeyed on cheerfully till now, when the thought comes upon me of the immense anxiety of my friends concerning my future punishment, so that I have determined to put an end to my existence and my awful condition. The strain upon my dear mother’s nerves is terrible to think of. There are many keepers about here, and I shall wait for one, seize his gun from the corner of the public-house, and shoot myself. I feel the writing of this much more than I shall the act, as it is for your good. I sadly fear I have mistaken my vocation in life. Please excuse me if I do not write in an affectionate strain, as it would unman me. As regards Hamburger, I do not think he will continue telling such a tale after my death. It was a fair duel, and the odds were against me. There had been a long and severe quarrel, and he had libelled me, and I was determined to be avenged. I drew part of the powder from the cartridge, and did not think it would kill. I asked him which he would have—the dagger or the pistol, and he said the dagger. I threw it to the other end of the room, and when he rushed to pick it up, I fired. I then closed with him, and after a terrible struggle I wrested the dagger from him, and threw him off. I repeated my act, and asked him to make terms. He offered me a sovereign to go, but I did not ask or wish for money. I said if he would allow me half-an-hour’s start I would leave him, on the condition that he would not pursue or prosecute me. He promised most faithfully to do so, and I threw down the knife and ran. He picked it up and followed me down the first flight of stairs. I made a stand, when he at once returned to the room, and I ran down Andrew-street, jumped into a cab, and drove to Westminster. My life has been a misspent one, but I do not think it has been a wicked or unkindly one. There have been few people whom I have known and met in need but what have partaken of my generosity in some form or other. My worst passions were roused in my last interview with Hamburger. The issue is only too much to my disadvantage. I have been backward in the world all my life, and it was hardly to be expected that I should die a natural death. I am determined to die, and await my end with impatience. I have not heard a single gun fired, and it is now 12 o’clock. I do sincerely hope some one will come soon who has one. Let me but see one, and I believe I have ingenuity enough to get

possession of it. I should not like any other form of death. I consider it courageous and noble. Englishmen have died by the bullet. If there is any difference, it is more brave to die by rabbit shot. In conclusion, I hope possession will be given to my father of the offices in Spencer-street, as I am indebted to him many hundreds of pounds, and the goods by right belong to him. May Heaven bless my dear mother, and soothe her in this heavy affliction. I need not ask her to forgive me for causing such horrifying anguish. She has so much gentleness that I know I have her prayers and blessings; and, dear father, forgive all my rashness, I beseech you, and believe me, I die happy, and do not trouble about me. And now, my dear sisters, a long farewell. Farewell, dear brother, nephews and nieces, and take my blessing, and do not believe it is that of a guilty criminal. And now may Heaven help me to cheat the hulks of their victim. I await my end with impatience, and shall cheerfully die. Oh, that I had a gun at this minute? The chances I have had and missed them! And now I believe I have only this to say, that my letters may be given to those from whom they were received, and all matters in them kept strictly secret. I write these lines in a truly sane frame of mind.—
W. JACKSON, Birmingham.

P.S.—Not a single sportsman visited the house all day long. I therefore went to Lewes and bought an old pistol. I shall be certain of an escape now, and feel perfectly happy. I do hope Hamburger will get well, but do not consider that I shall have his murder on my soul if he dies. I do not consider I die a shameful death, but rather glory in showing there is some real firmness in my resolution. As regards my business transactions, I beg to say that I was first cheated, and nearly every transaction I made I was deceived and not paid. As regards the rhyme found at the office, I wrote it as a satire on some person, because he seemed to doubt my ability to write the lines to my niece, and hope no notice will be taken of it. I cannot leave this world without mentioning the sterling qualities of my friend Mr. Makins, and sincerely hope he will be successful in life, as he deserves to be. I have several inventions that I wish I could leave my relations, to partly remunerate them for the monetary losses they have sustained through me; but that cannot be, so I hope they will take the will for the deed.

Here followed a history of his life from boyhood. Referring to his connections with Hamburger, the narrative states:—

He called at my office many times, but I would not buy of him. I was inclined to purchase on one occasion, but he wanted cash. I did not deal with him, and he went away, saying he could not trust bankrupt firms. As the name was my father's, I felt the sting of shame deeply at being taunted. Thinking I had disgraced my family all at once I thought I could see an honourable way of avenging the

insult, and I set about carrying out my plans in earnest. I little thought it would be consummated so soon; but so it is, and I am content to die; but my motives were as far from assassination or robbery as heaven is from earth. I should like to be buried where I was christened, and carried by people who knew me in life—St. John's church, I think it was.

With regard to the relations existing between Jackson and Hamburger, they were entirely of a business character. Although at the time of the occurrence, Jackson did not appear to be in money difficulties, it was known that he had formerly failed in business on his own account in Birmingham. From a statement made by Hamburger to the Police Inspector, he had, some time previously, attempted to transact business with Jackson on credit, but, owing to the references not being satisfactory, the bargain fell through, and they had not again met until the occasion of the assault.

The verdict of the Coroner's Jury was "that deceased committed suicide, but there was not sufficient evidence to show the state of his mind at the time." Truly a remarkable verdict, after the evidence given and the statements made before them! It is a verdict given, be it remembered, not with reference to the assault on Hamburger, but as to the how, when, and where of Jackson's death. If the evidence on the latter score was not sufficient to show the state of the suicide's mind at the time, perhaps the intelligent Sussex jury would more readily have come to a conclusion as to the sanity or insanity of the individual, if there had been no evidence at all! By way of contrast in this matter of evidence, I give the brief account of two inquests reported in the same paper as having occurred during that week:—

STRANGE SUICIDE.—Mr. Humphrey held an inquest at the Vestry-hall of St. George's-in-the-East on Wednesday, as to the death of Thomas Casey, 23, a cigar-maker, of 29, Bett Street. On Saturday night the deceased was drinking in several public-houses in Ratcliff Highway with his sweetheart, a girl named Mary Leary. In the course of the evening they quarrelled, and the deceased struck the girl to the ground. They made the quarrel up, however, when the deceased suddenly left Leary, saying, "Wait for me, Polly, I won't be long." He went in the direction of Old Gravel Lane, and shortly afterwards Police-constable Robert Brown, 632 K, who was on duty on the bridge in the London docks, saw the deceased mount the railings and deliberately jump into the water. The constable called for the drags, and ultimately the dead body of the deceased, by their use,

was recovered. A verdict of "Suicide while of unsound mind" was returned.

SUICIDE.—An inquest was held at Longton on Wednesday, on the body of a schoolmistress, named Annie Brookshaw, aged 22, who committed suicide by drowning herself. It appeared that the young woman was suspected of having given birth to a child, and when taxed with it she went and drowned herself. The child has not been found, but there is no doubt that deceased had been confined. Verdict, "Suicide whilst in a state of temporary insanity."

The circumstances of the two cases just given, although briefly related, are sufficiently explicit to be understood, and the jury, in each case, returns a verdict of "unsound mind"—in the case of the sweethearts it is not even stated to be "temporary." But in the case of Jackson, where the evidence of insanity is unquestionable, the jury—in the height of their conscientiousness no doubt—cannot come to any conclusion at all as to the state of mind of the individual at the time.

I would not be understood to imply that—as some would have us believe—suicide is *per se* an evidence of insanity, or that in no case of suicide could a question arise as to the mental condition. But if there were any occasion upon which one would be disinclined to haggle about the sufficiency of evidence as to the insanity of an act, it would surely be when a fellow-creature commits self-destruction.

Returning to our original case, and taking into consideration the history of the twofold event, viz., the homicidal attempt on Tuesday and suicide on the Sunday following, there are three issues that might be raised with regard to Jackson's state of mind—

1. Was he sane on both occasions?
2. Was he sane when he attempted to murder Hamburger, and insane when he murdered himself?
3. Was he insane on both occasions?

I.—With regard to his being sane on both occasions. Well—knowing what we do of the evidence—if he had been, I venture to think the Sussex Jury would have found it out, or, perhaps, a possible fourth issue might have occurred to them, viz., insane during the homicidal attempt and sane when he committed suicide!

II.—The second issue is much more pertinent, and in its suggestiveness it opens out several points of inquiry.

Was he sane at noon on the Tuesday, when he assaulted Hamburger, and did he afterwards become insane and destroy himself while in that state?

Had Jackson been captured and taken into custody on the day he made the murderous attack, I confess it would have been somewhat difficult, even upon the knowledge we possess regarding him up to that time, to establish satisfactorily that when he committed the act he was in an unsound state of mind.

The public would have said, and said legitimately, "here is a man going about his ordinary calling or business, who inveigles into an empty office a fellow dealer against whom he is known to have borne, upon grounds more or less well-founded, a grudge, and there attempts to murder him by shooting and stabbing." What occurred between them may not be known; but the father of the injured person comes forward to state that his son gave umbrage to the accused by declining to deal with him on credit, as it was found on inquiry that he had not (so to put it) recovered from a state of bankruptcy in which his affairs had been some time ago; and further, that he (the father) can produce evidence that the accused had repeatedly talked about having been grossly insulted by some one; and so on.

The counsel for the prisoner in his plea of insanity would have been able to refer to the excellent and industrious character of his client, and to the absence of any sufficient motive for such an act. He would have pointed out the evidence as to the eccentricity of conduct of the prisoner and the fact that he suffered repeatedly from severe headache; there being, besides, the absence of immediate pecuniary wants, and of all proof that Jackson ever threatened Hamburger; and more to the same effect. The going about armed might, in itself, be taken as explainable either on the footing that he was sane and went about with a deliberate intention of evil, or that, being under the influence of delusion or some insane imaginings, he went about prepared to defend himself.

At all events, if we could disabuse our minds of the after events, it might here be readily admitted that the evidence was anything but sufficient to demonstrate the insanity of the act; if indeed that evidence did not point to Jackson's guilt and mere criminality.

For our present purpose, on the hypothesis of Jackson's capture, it will be convenient to take it as possible that, at this stage, the balance of opinion did not proclaim itself in

one or other direction. Now in order to carry our issue to a decision, and to gather from it what teaching we can, there remains an all-important step, the personal examination of the accused with reference to his mental condition at the time the act was committed. The value and importance of this measure—the personal examination of the accused—do not always meet with due recognition; and as such an examination forms neither more nor less than the completion of the evidence upon which a momentous issue often hangs, any wish to omit it, or to regard it lightly, is an interruption to the operation of justice, whose impartial decision is, after all, the great desideratum. And what is the *rationale*, the why and the wherefore, of this examination?

Every sane individual moving and acting his normal part in the world is to be held capable of estimating, “according,” as the saying is, “to his lights,” the character and conduct of those of his fellow-beings with whom he is in any way brought in contact: and upon this footing is raised that conglomeration of relationships which forms the basis of communities and of society at large. This is all well enough when the sphere of thought and action in question lies within the elastic enough usage of moral and social requirement; but when something of extraordinary or anomalous import happens—as the commission of a grave crime—every such individual, however fully entitled to his own opinion, has not the same opportunity or capability of judging as to the value of the act in relation to the mental condition of the offender and to the rules of society.

It is a curious, if somewhat unfortunate, circumstance that those who know least about insanity are the most ready to form and to express an opinion as to its presence or absence in doubtful cases. In the vast majority of instances where an act of criminal import has been committed, no individual of ordinary intelligence has any difficulty in coming to a conclusion on this point. No one, for instance, could fail to interpret aright the purely criminal import of the act by which Wainwright did his victim to death and hacked her in pieces. Nor, on the other hand, could any one entertain a doubt as to the utter insanity and irresponsibility of the wretched man Robert Edwards, who on the second morning after his admission into the Norfolk and Norwich Hospital for “dyspepsia,” hammered to death with a pair of tongs three boy patients, and injured two others. In proportion as a departure is made

from extremes of such simplicity, so do the intricacies of the question multiply and tend to disturb the unanimity of opinion. And at last we come to a midway region where the *pros* and *cons* as to the sanity or insanity of a particular act or person are so mixed up that the finding of individuals, so far from meeting with universal sanction, discloses public opinion on the equipoise, and perhaps a life trembling in the balance.

Upon what grounds, or variety of grounds, do the generality of individuals form their opinion in this matter?

There are those who cannot get over the impression formed by them on the first blush of the case. There are those who, in the fulness of their sympathy or repugnance, are unable or unwilling to subordinate their emotions to the matter-of-fact exercise of reflection. There are those, who, practically, if not always as a matter of principle, rely upon their estimate of motives as a test of responsibility and of mental condition. There are, strange to say, those who, looking upon mind as a mere metaphysical abstraction, repudiate its dependence upon a physical substratum, and would deny the utility of observations or of investigations which imply the necessity of a material basis for all mental manifestation, whether sound or unsound. There are, moreover, those who, not always mindful that the brain is the physical fount of mental action, take refuge in the illogical and insufficient traditionary dictum of the law that a knowledge of right and wrong is the touchstone of mind in criminal cases: a test-doctrine which is capable of partial application only, and which, in practice, necessitates a division of insanity, estimated at the time of commission of a particular criminal act, into two sorts—the responsible and the irresponsible, a classification which the public is never likely to accept.

Now, taking these various groups of individuals, there is not one whose representative could be accepted as capable of conducting a satisfactory personal examination of an accused person where the ordinary evidence is conflicting. The public want to know all that can be known about the circumstances of the case, and about the individual accused, before it will, through its juries, return a verdict. Not one of the groups named is capable of arriving at a complete knowledge of the bearings of the case by its own limited method of investigation. The most authoritative group—that of the law—tells us through one of its Judges that it does not matter how much the mind may be diseased, the question of

a person's responsibility in criminal cases has reference only to his knowledge of right and wrong at the time of committing the act; that, in fact, we are to leave out of consideration the possible workings of a whole range of diseased mind.

It is plain that in order to get at the *whole truth* in criminal cases where the plea of insanity is urged, a personal examination of the accused is necessary for various reasons, the chief being to avoid the risk of punishing an insane and irresponsible person on the one hand, and, on the other, to prevent a mere criminal who is perhaps feigning insanity from escaping punishment on a false ground. Mind is the complement of the body in man's constitution; and the physiology of mental and nervous action cannot be studied without a knowledge of its relationship to the various organs and functions of the body. Hence the necessity and importance of having the testimony of medical men who from their training and life experience are able to form a special opinion on the particular as well as on the general merits of a case. And so in our hypothetical case, the decision as to the state of Jackson's mind at the time he committed the murderous assault, would, had he been captured, have rested mainly on the evidence which medical men were able to give after having examined him.

If it be ruled that our second issue is the correct one, and that Jackson was sane when he committed the act, it is quite conceivable that the further pressure upon an already eccentric and restless mind was enough, in the course of the five days that followed, to develop the state of insanity which ended in suicide. But this latter is a minor question which we need not enter upon.

I have referred to the legal dictum as to responsibility in criminal cases as being illogical, insufficient, and impracticable; and although this has been demonstrated over and over again, it is astonishing with what pertinacity some eminent judges adhere to it and urge it to its utmost limits.

In the "Great Berkhamstead case," D. E. was charged in March last year, before Sir W. B. Brett, for the murder of two of his children. The plea of insanity having been set up by his counsel, the learned Judge, in a lengthy charge to the jury, is reported* to have laid down the following rules

* "The Hertfordshire Mercury." for March 10th, 1877.

for their guidance:—"Some further explanation must be given of this 'not knowing it was a wrongful act.' It was not sufficient that his mind was diseased, but to be so far diseased as not to know the nature of the act, or not to know that it was wrong. Now, was the mind of the prisoner so diseased that he thought it would be better that his children should die, but not so far diseased as to know that in killing them he was committing an offence against the criminal law of the country? If his mind was so far diseased, but only so far as this, then the jury would find him guilty of wilful murder. In the case of McNaughten,* which had been mentioned, it was absurd to defend him upon the ground that what he did he believed to be for the benefit of the country. However, if the prisoner thought it was for the benefit of the children, or of the wife, that the children should die, it was contrary to law, and a wicked thing to do. That was the question to which the jury had to give an answer, and if they took an honest view of it, and could conscientiously say that when the prisoner killed the children he did not know that at law it was a wicked thing to do, or that it was contrary to the criminal law of the country, they would acquit him on the ground that he had satisfactorily excused himself; but if, on the other hand, they found that he did know, *however much they might think his mind diseased*" (the italics are ours), "it was their duty to say that he was guilty of murder. . . . The evidence, no doubt, showed that the man was in poverty and distress, and in a state of melancholy, but did it show insanity? That is, did it show that the man did not know that it was wrong to kill his children? The question was, what was the state of his mind when he did the act? and this was to be inferred partly from his conduct and words just before and afterwards. He went and gave himself up for murdering his children."

Here the jury are told by the Judge that it is not a question of insanity they are trying (for it does not matter how "much you may think his mind is diseased") but it is a question of the prisoner knowing or not knowing that it was a wrongful act he was committing.

The evidence shows, and the Judge referred to the point, that the first known act of the prisoner after the murder, *i.e.*, the act most adjacent to the act in question, was, that he gave

* McNaughten was tried in 1843 for the murder of Mr. Drummond, and acquitted on the ground of insanity.

himself up to the police for murdering his children. Whatever the value of this act may be taken to be, as an evidence of insanity, there is only one construction that can be put upon it in relation to a "knowledge of right and wrong."

There can be no doubt the prisoner knew that he was doing what was wrong: yet the jury found him "not guilty on the ground of insanity."

Again, in the case of Bampied, tried at Maidstone in 1873, for the murder of a fellow-workman in Chatham Dockyard, the same learned Judge summed up in a similar strain; and with reference to some medical evidence given, he said—"as to the 'swimming in the head,' why, it had nothing to do with insanity." The summing up, as the "Times" said, "pointed very clearly to a conviction;" but the jury would not have it, and acquitted him on the ground of insanity; stating expressly that they meant insanity in the sense which his Lordship had explained to them.

Once more, at Croydon, in 1875, Lord Justice Brett, when trying Fredk. Hunt for the murder of his wife and child at Penge, thus delivered himself to the jury:—*

"They must," he told them, "disabuse their minds of the medical notions as to insanity, for the reason that these medical men had not met the Court upon the ground which they desired them to do, and that their opinions were founded on their own ideas as to what the law of insanity ought to be. Even at the risk of appearing to sum up against the prisoner, he must tell them that it was not enough for them to be satisfied that the prisoner was insane, but that he was so insane as not to know what he was doing, or if he did that he did not know that he was doing a wrong thing, or that he did not know he was doing a thing contrary to law." "The jury, however," says the paper, "without any hesitation, found the prisoner not guilty on the ground of insanity." This was their verdict, although Mr. Straight, the counsel for the prosecution, contended, and quite truly, "that, although the prisoner's mind and body were not absolutely and thoroughly sane, there was abundant evidence from the letter written by the prisoner to Mr. Guest, that he knew what he was doing, and knew also that he was doing wrong."

John Cuthbert was tried before Mr. Justice Quain in Oct., 1875, for "feloniously administering poison to Frederick Bond, with intent to kill and murder him," and acquitted on

* "Times," Aug. 2nd, 1875.

the ground of insanity. The learned Judge, in summing up, said ("Times," 28th Oct., 1875), "this was not a case of sudden and passionate impulse, the prisoner deliberately mixed what he must have known to be poison with the port wine, and it would be a serious and dangerous thing to apply the doctrine of irresistible impulse to such a series of acts. Of course, however, if the jury thought that the prisoner did not know at the time that he was doing wrong, they would return a verdict of 'not guilty.'"

The following case, although less simple in the manner by which an ultimate conclusion was arrived at, testifies to the social distrust of the legal dictum:—Edward Abbott was charged at the Somerset Summer Assizes, in 1873, with the murder of his own daughter, aged 3 years, and with attempting to murder himself on the same day. Sir J. Fitzjames Stephen, in an elaborate summing up, pointed out the law for the guidance of the jury. In the course of his remarks he is reported* to have said that mental disease was not enough to free a man from the consequences of his act, but it must go the length of rendering him incapable of distinguishing right from wrong, and that was the great principle upon which they would have to decide the case." The jury came to the following decision:—"We deeply deplore being unable to find sufficient evidence to enable us to return any other verdict than one of 'wilful murder,' but we desire strongly to recommend the prisoner to mercy on account of previous family bereavements and domestic trial." Whereupon the prisoner was sentenced to death. The uneasy feeling which betrayed itself in the verdict of the jury found public voice in meetings and memorials, which were a virtual protest against hanging a lunatic simply because he was not so utterly mad as to be incapable of knowing right from wrong. It appears from the account given in the issue of the same paper for September 6th, that "Dr. Orange, Medical Superintendent of Broadmoor Lunatic Asylum, having examined the culprit, reported to the Secretary of State that he had no doubt of the man's insanity now (September, 1873), and at the time of the murder." A similar opinion was expressed by three local medical men; and the case ended in a reprieve, and the removal of Abbott to an asylum.

The significance of the following case is apparent:—

Charlotte King was tried before Mr. Justice Field, in March,

* "Somerset County Gazette and Bristol Express," Aug. 16th, 1873.

1877, for the wilful murder of her child at Kingston; and after his Lordship's summing up of the evidence, the jury immediately returned a verdict of acquittal on the ground of insanity, although the following positive medical testimony had been given by an expert of long standing:—"Dr. John Millar, Medical Superintendent, Bethnal House Lunatic Asylum, deposed that Mrs. King was an inmate of that institution in 1873, when she suffered from acute melancholia. He believed, from his knowledge of her, that she was incapable of resisting the impulse to destroy the child. She was, without doubt, insane. *She knew she was doing wrong, doubtless, but could not resist the homicidal impulse.*"

It is quite unnecessary to multiply instances, for those that I have given suffice to show that, in test cases, society prefers to base her decision in this matter of criminal responsibility upon a faithful rendering of the teachings of science and of experience in human nature, rather than upon that unbending dictum of the law, which, however hallowed in recent tradition as the utterance of judges of the highest eminence and probity, fails in the sight of the riper knowledge of the day to make its mark; and which being obsolete in practice, ranks as a mere sophism. I have not recapitulated these cases in any boastful spirit of triumph. God forbid! The arena is ill-suited for any such tone. If, in self-defence against repeated attacks and to establish her position, medical science has to explode the legal magazine of words, the misfortune lies not in the act, but in the necessity for it.

Juries may be told to "disabuse their minds of the medical notions as to insanity," but what of that? Will juries forget that all the recognised insanity in the country is under the continuous supervision of medical men who have, more or less, devoted their special attention to the subject, while the learned gentlemen who (in the interests of justice!) in good faith, and in consistent support of their tenet, thus advise them, have probably never seen the inside of an asylum for the insane, or attempted to study the mental and physical attributes of a single lunatic? It is not therefore surprising, if juries, in the exercise of their common sense and world-knowledge, prefer the matured indications of practical knowledge to abstract speculations, defined, indeed, by law, but untrue to nature. Not a few jurymen have had practical experience of insanity among persons of their acquaintance, and they do not fail to recognise how devious and subtle are its workings.

It is not enough to say that, in test cases, cases where the question of insanity is legitimately raised and contested, the presence of a knowledge of right and wrong is not accepted by juries as a sufficient criterion of responsibility. There are cases where the presence of that knowledge is clearly shown to exist amidst an insanity and an irresponsibility which are, I might say on all hands, admitted. The two well-known cases of the artist Dadd and of the Hon. W. Ross Touchet may be taken as illustrations.

Dadd murdered his father in Cobham Park, and immediately fled the country. No one can doubt that this unfortunate parricide knew that he was committing a wrong against law and society, when, in obedience to behests that were, in his insane mind, supreme, he thus "offered a sacrifice" for the release of the "great god Osiris."

When, with a smile on his face, Touchet shot the keeper of a shooting gallery, he told the wounded man's son, who was standing by, that he bore no animosity against his father, but that, as he was tired of his life, and wished to be hanged, he had shot him on purpose. The very knowledge that death was the legal punishment for the wrongful act, was, in his condition of mental derangement, a stimulus for him to commit the act.

Although the behaviour of an individual immediately before or immediately after the commission of a homicidal act is no absolute criterion of the state of mind during the act, a right interpretation of that behaviour has much significance as an evidence that the individual did or did not know he was committing a wrongful act. Thus, lunatics undoubtedly irresponsible, and criminals undoubtedly sane, are found purposely to have committed homicide, either in places remote from human concourse, or under circumstances implying stealth, secrecy, and preparation for the deed. Now, whatever possible difference of opinion may be suggested about their respective insanity or sanity, no one, I fancy, would deny to either set the possession of a knowledge of right and wrong at the time. And the same position is tenable as regards the immediate after-acts. If a homicide straightway goes and informs the police or his next-door neighbour of his act, or if he makes his escape and hides himself, we may put any interpretation we choose upon such acts as evidence of the man's mental condition while he did the deed; but they point without doubt to a knowledge of right from wrong on his part at that time. Hence the legal dictum is insufficient, and fails

to help us, as a test, when we are trying to find out the state of a particular mind before and after and during a particular act. That is, although we are now satisfied that (before and after, and) when he committed the act, the man knew right from wrong, we are as far as ever from knowing the state of his mind (as to sanity or insanity) at the time.

If mere mental disease, however extensive, is not sufficient to save one person from being hanged, it ought not to save another. The cause of an act of homicide being the same in two cases, one would be inclined to expect that the legal consequences would be something similar, and not totally different, in both.

As in the case of the ordinary insane homicide, it frequently happens that the mother who, in the throes of puerperal mania, kills the infant at her breast, possesses a knowledge of the wrongful nature of the act she is committing. According to the dictum of the law, she ought to be hanged equally with the other; but according to fact, she is not: the dictum is not pressed even if it is mentioned, and medical men are not taunted about their notions under such circumstances. The injustice is evident, and leaves the law with its dictum in rather a humiliating position; for the obduracy which refuses to give way to the plainest manifestations of hapless disease is found to break down completely when sentiment breathes her tender plea. And who prides himself more in his repudiation of the influence of bias or sentiment than the representative of the law, when in a criminal case he proclaims the prerogative of an even-handed justice!

In the matter of suicide again, which is a criminal act, if the law were consistent it would bring out its dictum and institute a grand search for cross-roads; for if any evidence at all comes out at inquests in such cases, it is found almost invariably to prove the lamentable intensity of the individual's knowledge of right and wrong, and a verdict of insanity is at once returned. This verdict, implying irresponsibility and immunity from the legal consequences, is not, in itself, necessarily a matter of complaint; but if to know right from wrong is the criterion of criminal responsibility, why is it not acted upon? why does the operation of the law not take its course upon the suicide's body?

The law is brought into this position. If its dictum is right almost every suicide is a criminal act and not that of an insane person. But if the knowledge of right and wrong

is present in most, or in any, cases of suicide where the verdict of insanity (and immunity from consequences) is returned by juries, then the dictum is wrong.

If the dictum is right, why not carry out the presumably necessary enactment of the law as to the disposal of the body?

If the dictum is wrong, why not abolish it?

But if in its practical application the dictum has been shown to be fallacious, insufficient, and illogical, it is for the law itself to show its absurdity.

Blackstone, in his *Commentaries*,* lays down the following teaching, which, I take it, still holds good:—"If a man in his sound memory commits a capital offence, and before arraignment for it he becomes mad, he ought not to be arraigned for it, because he is not able to plead to it with that advice and caution that he ought. . . . And if after he has pleaded the prisoner becomes mad he shall not be tried, for how can he make his defence? . . . If after he be tried and found guilty, he loses his senses before judgment, judgment shall not be pronounced. . . . And if after judgment he becomes of non-sane memory, execution shall be stayed, for peradventure, says the humanity of the English law, had the prisoner been of sound memory he might have alleged something in stay of judgment or execution."

Here are four positions in which the advent of insanity is a bar to further proceedings in the case of a sane person who has committed a capital offence, viz., if he became mad—1. Before arraignment. 2. During trial. 3. After verdict of guilty, but before sentence. 4. After sentence and before execution. In not one of these positions will the question of the individual's knowing right from wrong be raised, whether in relation to the time the act was committed, for he was then sane, and must have known it; or as to his present state, for a knowledge of right and wrong is no proof of sanity.

A sane homicide sentenced to death becomes insane; he cannot be hung. If the dictum is adhered to throughout, an insane homicide so sentenced and continuing insane cannot escape death. With the law it is thus: An insane person, who, however diseased in mind, knew right from wrong when he committed a murder, is tried, found guilty,

* Vol. i., B. iv., c. ii., p. 23-4.

and condemned to death. But if, after judgment, a prisoner is found to be insane (“of non-sane memory”) “execution shall be stayed,” and he is reprieved on the ground of insanity (the dictum being disregarded). The law finds, first, that although insane, he must be hanged; and secondly, that because he is insane, he must not be hanged. This is of course one way for the law to establish its humanity; but it appears to establish more clearly the absurdity of the legal dictum as to criminal responsibility.

The dictum is capable of hanging any number of madmen: yet what does Sir Edward Coke say? “The execution of an offender is for example—*ut pœna ad paucos, metus ad omnes perveniat*—but so it is not when a madman is executed; but should be a miserable spectacle both against law and of extreme inhumanity and cruelty, and can be no example to others.”

But in avoiding the obstructive Scylla, we must be careful to steer clear of the all-engulfing Charybdis. If we reject, as fallacious and insufficient, the theory that a knowledge of right and wrong is a test of criminal responsibility, we must also guard ourselves against the opposite extreme, which would have us believe that criminals are but lunatics after all, seeing that they are but the victims of an ancestral destiny revealing itself in the operations of a tyrannous mental organisation. I believe that an impulse in this direction has been given to opinion by some generalisations ventured upon by the late Dr. Thomson, of Perth Prison. With all due respect to the convictions of this writer, I am reluctantly compelled to say that I look upon many of his statements, in so far as they are generalisations, as rash and misleading, and fallacious. After speaking of the theories of M. Despine about the absence of the moral sense in criminals, he brings forward his practical experience in support of the existence of moral defects and depravities among them. Working up through a species of insanity of the moral sense, he makes finally the following express statement*:—“The most remarkable characteristic I know of the criminal class is their *liability to brain disease and complete insanity*.” “In the General Prison of Scotland,” he adds later on, “I find, during the decennial period 1860-69, that 1 out of every 140 prisoners became” (*became*, says Dr. T.)

* Article on “Psychology of Criminals”—“Journal of Mental Science,” Oct., 1870.

“insane, and during the latter five years, viz., 1865-69, there has been 1 out of every 113 criminals, a material increase upon the average number of former years.” Whatever may be the original mental condition of Scotch criminals, and whatever may be the effect of the Scotch system of imprisonment in the production of insanity, I can only say that the impressions conveyed in the above statement do not correspond with the impressions formed by me, after a ten-year’s experience of several of the largest of our English Convict Prisons; nor are they borne out by an examination of the actual facts as to criminals in England.

I grant, and I have never lost an opportunity of urging the fact, that the degraded and defective phases of character and morality described by Dr. Thomson and others find powerful illustration among English convicts. But in what proportion? In the English Convict Prisons from 3 to 4 per cent. of the population are insane, epileptic or of such weak-mind as to unfit them for full prison discipline. How dangerous—not to say ridiculous—would it be if, taking this number, or three times this number, we were to set to work and argue in a general way towards making ourselves believe that insanity in any form is the characteristic of criminals. At all events, any impression formed by a perusal of Dr. Thomson’s statements must go towards the fallacious generalisation that I have been speaking about. The statements of opinion and of fact may undoubtedly be true and useful up to a certain point; but any tendency to make their application universal in the criminal mental character is to be resisted. It does not matter very much perhaps in relation to our present inquiry, that people of a philanthropic turn, in dealing with the abstract, prefer to quote and re-quote the generalised statement in support of their doctrine (itself partially true if you like) that the criminal is but a “moral invalid,” a “moral imbecile.”* But when statements of this character come to be used in implicit reliance by authorities in medicine and psychology for the purpose of specifically grafting crime upon the stock of insanity, it is time to speak out.

In some cogent and well-turned paragraphs,† intertwined

* At the International Prison Congress held in London in 1872, Count D’Alinge, of Saxony, pointed out that the object of prison legislation and administration with regard to criminals is to “restore the morally sick to health, to temporal and spiritual salvation.”

† “Responsibility in Mental Disease,” International Scientific Series, 1874, Chap. I.

with relations of Dr. Thomson's sentiments, Dr. Maudsley says as much as I think can be said in this direction, and more than is warrantable or safe. At page 22, he tells us, "there is a destiny made for a man by his ancestors, and no one can elude, were he able to attempt it, the tyranny of his organization." And, page 23, "when we observe what care and thought men give to the selective breeding of horses, cows, and dogs, it is astonishing how little thought they take about the breeding of their own species: perceiving clearly that good or bad qualities in animals pass by hereditary transmission, they act habitually as if the same laws were not applicable to themselves—as if men could breed well by accident—as if the destiny of each criminal and lunatic were determined, not by the operation of natural laws, but by a special dispensation too high for the reach of human inquiries." Once more (most ingenious way out of a difficulty!) at page 27—"If we are satisfied that our prison-system is the best that can be devised for the prevention of crime and the reformation of the criminal, we may rest satisfied that it is the best treatment for the sort of insanity from which criminals suffer." These quotations indicate the drift of Dr. Maudsley's argument, but of course they fail to express the full force of it. They are, however, sufficient for my present purpose, which is to protest against bracketing "criminals and lunatics" by themselves in the sense here implied, and against speaking of crime as a form, or "sort of insanity." In what I have quoted, Dr. Maudsley, in working out *per se* the fundamental principles of mental action, may be, and presumably is, speaking apart from all question of "responsibility." If this be so, of course I can quite understand it, and in a sense agree to it all. But if we are speaking outside the question of responsibility, is it right to use terms—"criminal" and "lunatic"—which are nothing without that question? If to have more or less of a flaw in our morals or moral sense ("moral sickness") is to render us first what is termed criminal, and then lunatic; then, verily, are we all criminals and all lunatics—and in the eye of an Omniscience it may be so; seeing, according to the Psalmist, that "the children of men are all together become filthy; there is none that doeth good, no, not one."

But the lines or rules of society—although not based upon any prerogative of omniscience—are formed upon standards of conduct—elastic it is true—but still standards. Admitting a free play for eccentricities and deviations in the

matter of character and conduct, society yet draws a line at which her self-preservation and the dictates of justice necessitate the more or less entire interruption of the headlong course of individuals who become unduly eccentric, disorderly, or recreant in their behaviour. The test as to the mode of disposal of such individuals lies in their responsibility or irresponsibility for their actions; and in accordance with this test, two groups are formed, viz.: criminals and lunatics. While both groups are detached from promiscuous social intercourse, they are, nevertheless, by social requirement, as well as by mental characteristic, placed on separate and distinct footings.

The risk of admitting that, under any circumstances, or from any point of view, "crime is a form of insanity" lies in the possibility of the doctrine being taken as true under *all* circumstances. I grant that Dr. Maudsley may show that he has hedged himself so as to guard against this universal application of his meaning—but that is not sufficient to do away with the danger that a misleading phraseology will be misapplied by theorists and others who search everywhere for a support to their case. To say that "crime is a form of insanity" would, moreover, be fatal to the reasonable hope that some day when the dictum of "right and wrong" is dropped, there may be found a consentaneous principle upon which the law and medical psychology may be able to harmonise in the matter of criminal responsibility.

The construction capable of being put upon the passages I have quoted, is evident enough. Whatever opinion may be held as to the defective mental and moral capabilities of a limited stratum of individuals at the lower end of the criminal class, my experience of criminals and lunatics compels me to reject the theory that even in a restricted sense criminals are lunatics, and that crime is a form of insanity.

Dealing with this subject twenty-four years ago,* Dr. Bucknill, notwithstanding his usual care, makes use of a phrase which, from another standpoint, is misleading in the same direction, but which might have been avoided, as on his own showing in the context the exact usage is not only conflicting, but, I might say, unnecessary. Dr. Bucknill, in this work, first defines insanity as "a condition of the mind in which a false action of conception or judgment, a defec-

* "Unsoundness of Mind in Relation to Criminal Acts."

tive power of the will, or an uncontrollable violence of the emotions and instincts, have separately or conjointly been *produced by disease*." He then forcibly points out how vicious and criminal habits and conduct stretch away towards insanity, and become closely allied to it, and ultimately speaks in the following terms (p. 36):—"The man who would claim for a criminal exemption from punishment on the plea of insanity, arising from the vicious and uncontrolled indulgence in some passion or emotion, would have to establish not only the existence of such a form of insanity, but to defend two other positions; namely, that a man is not responsible for conduct resulting from vicious habits of mind, provided the latter gain over him a complete mastery, and compel him, contrary to all dictates of prudence, to actions injurious to society, and ruinous to himself. And, secondly, that neither the fear nor the infliction of punishment will prove efficacious in preventing the repetition of such acts." "It would be a puerile employment," he adds, "to show the untenable nature of such positions." This is well put and most true—but it is the next clause that we take objection to, where he expresses his conviction that "*insanity* resulting solely from vicious habits of mind *without disease*, cannot confer irresponsibility for criminal acts." Comparing this with his definition where disease is a necessary factor in establishing the presence of insanity, we are compelled to quarrel either with the conviction, or with the definition. It is the mode of expressing his conviction that is at fault. Had he said—which I think would have met his case—that, however like insanity it might be, mere "criminal-mindedness cannot confer irresponsibility for criminal acts," the seeming contradiction would have been avoided; and Dr. Bucknill would not have been drawn to speak, however unwillingly, of an "insanity without disease"—a "form of insanity" (being no insanity) which cannot confer irresponsibility. This is the risk of phraseology to which I alluded. If, however, there is a form of insanity which is not irresponsible, but which is responsible, by all means let us hear what it is; but let it be a *bonâ fide*—and not a *pseudo*-insanity.

Every one who has the favour of the acquaintance of Dr. Bucknill and Dr. Maudsley knows that they are the last in the world to be carried away with such impracticable notions as that specifically a criminal is a lunatic. If I should have startled either of them by bringing up their name in connection with such an idea, I hope they will understand that it is

only to show that in a matter in which I believe we are all at one, it is better to explain points that might to some have the semblance of difference.

In relation to a possible agreement between lawyers and medical men on the subject of criminal responsibility, it is essential that, where there is no real difference, the latter should maintain an unbroken front, and, knowing the ground they are able to take up, so arrange the accumulated truths of experience as to obtain the most impressive results. The present tenets of the law on this subject are the verbal tradition of a by-past day, and the phraseology in which they are couched was no doubt adapted to the condition of the psychological knowledge—can I say the practical metaphysics?—of the time. Whether or not human nature is the same now as it then was is beside the question; but there can be no doubt that the interpretation of the operation of nature's laws in man, both in health and in disease, has been reduced to an exactness which may not only fairly claim to be termed scientific, but which approves itself to all men of intelligence and observation. If in some sense we admire the jealousy and tenaciousness with which some of our judges cling—in their judicial capacity—to the dicta of their official ancestors, would it be too much in us to cherish the hope that the day is not far distant when they will recognise the established truths of scientific experience, and see in the altered relationship of their dictum as to criminal responsibility the real cause of the sometimes unseemly clashing between law and medicine?

And, indeed, the times are not without some encouragement to this hope.

A Bill introduced into the House of Commons in 1874, by Mr. Russell Gurney, with the view of amending the Law of Homicide, led to the appointment of a Committee, before which most important and hopeful evidence was given.

The following evidence of Lord Justice Blackburn speaks for itself, and virtually displaces the legal dictum of right and wrong:—

We cannot fail to see that there are cases where the person is clearly not responsible, and yet knew right from wrong. I can give you an instance. It was in the case of that woman of whom I was speaking, who was tried for wounding a girl with intent to murder. The facts were these. The woman had more than once been insane, the insanity

being principally brought on by suckling her child too long ; that was the cause that had produced it before. She was living with her husband, and had the charge of this girl, an impotent girl of about fifteen, who lay in bed all day ; she was very kind to her, and treated her very well ; they were miserably poor, and very much owing to that she continued to nurse her boy till he was nearly two years old ; and suddenly, when in this state, she one morning about eleven o'clock went to the child lying there in bed, aged 15, and deliberately cut her throat ; then she went towards her own child, a girl of five or six years of age, of whom she was exceedingly fond, and the girl, hearing a noise, looked up and said : " What are you doing ? " " I have killed Olivia, and I am going to kill you," was the answer. The child fortunately, instead of screaming, threw her arms round her mother's neck and said : " No ; I know you would not hurt your little Mopsy." The woman dropped the child, went down and told a neighbour what she had done, that she had killed Olivia, and was going to kill Mary, " but when the darling threw its arms round my neck I had not the heart to do it." She clearly knew right from wrong, and knew the character of her act ; for some little time after that she talked rationally enough, but before night she was sent to a lunatic asylum raving mad ; and, having recovered, she was brought to be tried before me at a subsequent assizes. She did know the quality of her act, and was quite aware of what she had done, but I felt it impossible to say she should be punished. If I had read the definition in *Magnaughten's case*, and said, " Do you bring her within that ? " the jury would have taken the bit in their own teeth and said, " Not guilty on the ground of insanity." I did not do that. I told them that there were exceptional cases, and on that the jury found her not guilty on the ground of insanity, and I think rightly.

This is well borne out by the following extract made from a statement sent to the Committee by the Lord Chief Justice of England (Sir A. Cockburn) : —

As the law, as expounded by the judges in the House of Lords, now stands, it is only when mental disease produces incapacity to distinguish between right and wrong that immunity from the penal consequences of crime is admitted. The present Bill introduces a new element, the absence of the power of self-control. I concur most cordially in the proposed alteration of the law, having been always strongly of opinion that, as the pathology of insanity abundantly establishes, there are forms of mental disease in which, though the patient is quite aware he is about to do wrong, the will becomes overpowered by the force of irresistible impulse ; the power of self-control when destroyed or suspended by mental disease becomes, I think, an essential element of responsibility.

It is impossible to overrate the importance of this testimony

on the part of one of the highest authorities in the law at the present time.

If any one wishes to make himself acquainted with the present position of matters in this respect, he cannot do better than study the account given by Dr. Orange in his Presidential Address to the Reading Branch of the British Medical Association, in 1876.*

The following is an extract from that Address :—

Professor Casper, of Berlin, summed up his comments upon this point in these words, as given by his translator, “criminal responsibility (imputability) is, therefore, the psychological possibility of the efficaciousness of the penal code.” It will be observed that Professor Casper does not say that the mental disease must be such that all and every kind of external influence shall be incapable of moulding, in any degree, the conduct of the individual; but that it must be such that the *penal code* is no longer efficacious. This is a very important distinction; for it is sometimes urged that, because the inmates of lunatic asylums are capable of being influenced as to their conduct, and brought to exercise a considerable degree of self-control by a discipline which includes, as one of its elements, a modified system of rewards and punishments, therefore, there is no reason why the ordinary operation of the criminal law should ever be suspended in the case of lunatics. An argument of this kind shows an evident lack of the powers of appreciating the proportion and relative value of things.

The discipline of the insane in an asylum, so far as the question of rewards and punishments is concerned, is very much like the discipline of the nursery. The young child is quite capable of being influenced by a discipline suited to its years, but it by no means follows that the discipline would be improved by invoking the aid of the gallows or of penal servitude; and it is thus in an asylum.

If, indeed, the punishment of insane persons were efficacious to restrain their insane acts, it might, with some show of justice, be urged that such punishment should properly be applied; but, in former times, there has been sufficient trial of that system by stripes and chains and repression on all descriptions of lunatics and in every conceivable state of circumstances, and that system has as uniformly and completely failed as a more enlightened and humane system has succeeded. It is not by any metaphysical reasoning that the conviction of the uselessness of applying the penal code to lunatics is arrived at, but it is by the simple process of the observation of actual facts. To any one living amongst the insane, the proofs are so numerous and of such everyday occurrence that the question appears to require no argument.

* “The present Relation of Insanity to the Criminal Law of England.” British Medical Journal, October 3th and 20th, 1877.

It is at the point of controversial contact between legal dictum and scientific fact that lawyers in Criminal Courts are ever arrogating to themselves, as by a sort of heaven-born right, the duty of protecting the interests of society, with the implication that medical men are not to be considered in this relation. Yet the latter are always alive to her truest interests.

Indeed, were society in everyday life to depend for her protection in this respect upon the legal dictum that removes individual responsibility only when the knowledge of right and wrong disappears, she would find herself very badly served. Medical science recognises the loss of safety to society with the onset of insanity, and society accepting its recommendations takes the necessary precautions to avoid risk either to her members or to the individuals in question.

The nature of this transfer of responsibility from individuals to society is reserved for another chapter.

(To be Concluded).

The Varieties of General Paralysis of the Insane. By W. JULIUS MICKLE, M.D., Medical Superintendent, Grove Hall Asylum, London.

In any large group of cases of general paralysis, there are such differences in the mental symptoms, the paretic signs, the mode of onset, the course, intercurrent affections, duration, variability and mobility of symptoms, and pathological anatomy of the several cases, that one must feel that there are varieties of the disease. This has led to subdivisions of the affection, or grouping of its cases, scarcely any of which have had a pathological basis. True it is that Bayle, who was the first to differentiate general paralysis, and who attributed its striking phenomena each to a special morbid change, was led to place his cases in five series, in the first of which were simply the lesions of chronic meningitis, and in the second abundant serous effusion was added to these; in the third consecutive inflammation of the grey cortex; in the fourth arachnoid false membranes (cysts); and in the fifth various cerebral affections, complicated the chronic inflammation of the soft membranes. Yet many of his explanations are obviously incorrect, although his work marks a marvellous advance in science. Again, Baillarger, Requin, Prus, Du-

hamel, Duchenne, Sandras and others, held that general paralysis occurred either with or without insanity, and the first-named of these denied that the insanity is anything more than secondary and accessory in general paralysis of the insane.* Further, he speaks, and in this is followed by Lunier, of the symptoms of general paralysis as being produced by (1) chronic meningo-encephalitis, and by (2) chronic hydrocephalus (Dance, Moulin), or serous effusion following apoplexy (Rochoux, Moulin), or symptomatic of organic lesions. But they do not in any way distinguish between the cases arising from the two kinds of lesion, further than that Lunier asserts an absence of trembling of the limbs in those from lesions of the second kind.

But nearly all the attempts hitherto made, as far as I know, to delineate shades or varieties of general paralysis, have but set forth and emphasised certain symptoms, and especially certain mental features. It is evident that this cannot correspond with any real division of the disease into true pathological varieties, and can, at the best, but play the rôle of a measure of clinical and descriptive convenience. To illustrate the statement just made, it is only necessary to refer to a few examples of the numerous subdivisions that have been made of general paralysis into semeiological forms. The following, taken at random, indicate the views hitherto held on this subject:—

Billod (1850) mentions five groups, distinguished by their several mental symptoms—1. Ambitious monomania ; 2. Joyous satisfaction, and exaggerated or emphasised statements by the patients as to their surroundings or condition ; 3. Failure of intellect and of sensibility with aberration of will and agitation ; 4. Lypomania ; 5. Erotomania with dementia, failure of memory.

Brierre de Boismont (1850) held that there are two great divisions of general paralysis—(1) That of insane general paralytics, and (2) that of persons without mental alienation. The former, general progressive paralysis of the insane presents, in its turn, according to him, two varieties ; the first, more frequent, attacking patients in the prime of life, having as its principal intellectual disorder ambitious insanity ; and the second, much less frequent, affecting especially the more aged, although sometimes attacking those in the prime of life, and presenting the mental features of dementia. But

* This, however, is in antagonism with the views of many authors ; as Conolly and Maudsley.

in his second great division, that of general paralysis without alienation, he seems to acknowledge the presence of some dementia or loss of memory.

Jules Falret (1853), after describing four modes of onset, proceeds to limn three forms of the disease when established; the expansive, the depressed, and the maniacal; and, later, Brierre de Boismont describes four varieties of the expansive form—1. Mania of riches, of grandeurs, predominant and persistent; 2. Exaggeration of the ego, contentment, satisfaction, occasional ideas of wealth, of grandeur; 3. Mania of grandeurs, of wealth, only at long intervals; 4. Double form, expansive and oppressive, with ideas of wealth and grandeur.

These are precisely the four divisions of the expansive form made by Salomon at the same period. The depressed is the second of the two forms into which he would divide general paralysis, and of it he made two varieties—(1) in which the patients have a depressed and sorrowful exterior, but say that “all is well,” and they are “quite right;” and (2) in which there is a progressive decline of intelligence.

Calmeil (1859) makes a division into simple and complicated. Throughout the groups which are included under each of these forms, the mental and nervous symptoms are the distinctive features. This is absolutely the case in the first, the simple form (of chronic diffuse periencephalitis). The complications in each subdivision of the second form consist of certain intercurrent nervous phenomena, which he endeavours to assign to this or that pathological accident.

A subdivision into the forms mania paralytica, melancholia p., and dementia p., has also been proposed.

Nosological divisions, based upon mental symptoms or psychological differences, as in the systems of Arnold, Pinel, and Esquirol, are confessedly of but temporary use, and not in correspondence with true pathological variations. Applied to general paralysis, they are even more inexact. For in the latter affection, even more than in ordinary insanity, the mental symptoms often undergo most decisive and, perhaps, sudden changes. There is in it a great variability, so that he who suffers from ambitious monomania to-day, may to-morrow exhibit symptoms like those of general mania, may soon afterwards be plunged in the depths of hypochondriacal woe, and ere long have left all hope behind, having irrevocably entered the portals of a progressive dementia. True it is that many retain almost throughout some predominating

general character of mental symptom; there are those who throughout specially exhibit either grandiose delirium, or symptoms allied to general mania or to dementia, to hypochondria, to melancholia or to circular insanity. True it is, also, that in cases such as these, there is a general tendency to certain differences in the morbid anatomy of the several groups. At least the facts of the morbid histology observed for several years past seem to warrant me in making this assertion: the present, however, is not the place or time to speak of this aspect of the question. Yet, for the reasons above mentioned it seems that one cannot establish any real varieties based upon the differences in the mental symptoms.

Whether we shall ever arrive at them or not, I think the only true classification, subdivision and terminology in mental diseases must be based upon the morbid alterations of tissue or of function of tissue which engender the symptoms—that, in a word, they must be *anatomico-pathological*. For these purposes there can be no real finality, no pathological exactitude, in semeiology or in *ætiology*. Moreover, it is desirable to arrive at a knowledge of the real lesions in the various groups of cases of general paralysis, and thereby assist in the elucidation of other departments of the study of mental diseases. For the very complexity and gravity of its morbid lesions render general paralysis a vantage-ground for the further pursuit of investigation into other domains of mental alienation. Indeed, it was once said to be the only mental affection which enjoyed the sad distinction of possessing a morbid anatomy. But that was not recently.

With reference to the great diversities† one finds in cases of general paralysis, it is desirable to enquire whether groups of cases cannot be formed corresponding with certain differences in, or modifications of, the pathological lesions proper to the disease, each group of which shall present its more or less characteristic *ensemble* of symptoms or its individual method of association and relation of symptoms. Early in 1873 I began an investigation with this object in view; but the material did not accumulate very fast, for some general paralytics were discharged during remission or (temporary?) recovery at the request of friends, and the friends of some declined to permit post-mortem examination.

* A very brief statement of Dr. Clouston's experience in this relation occurs in "Journ. Mental Science," for July, 1875, p. 201. Dr. Aug. Voisin has worked this out with respect to the troubles of speech; and Dr. Westphal as to the spinal cord.

General paralysis varies much in different cases as to the parts of the encephalon especially attacked; the disease has in this case spent its force with greater severity upon certain localities, in that case upon certain other foci, and in still another upon a third locality or group of localities. In endeavouring to localise the points of principal morbid implication, I began, in 1873, to specially observe and record the localization of all the principal adhesions of the pia-mater to the cortex of the cerebral hemispheres. This adhesion I had always looked for and recorded in outline in earlier autopsies, and had come to view it as the most characteristic naked-eye appearance in general paralysis. These views as to its importance were confirmed by microscopical verification, in several cases, of a greater intensity of cortical disorganisation corresponding with the areas of more decided adhesion of the pia-mater to the surface of the brain, with limited separation of irregular layers of the grey cortex adhering to the meninges when these are removed (adhesion and decortication.*) In the early part of 1875 I wrote a paper ("Journal Mental Science," Jan., 1876), giving details of one of the cases in which each adhesion was thus recorded, and an attempt was made in that communication to see how far certain of the symptoms observed during life could be explained by a reference to the irregular distribution of the adhesion and decortication, and how far, in that case, the results of the experiments of disease tallied with those of the experiments of the physiological laboratory. Perhaps, and as far as I know, the above were the first investigations into the exact localisation and distribution of the adhesions in various cases of general paralysis, for the purpose of throwing light upon certain clinical features of the disease. I believe that valuable results are to be obtained from this line of enquiry, and, in publishing autopsies, I will describe the localisation of these adhesions with minuteness. Yet is it true, as remarked by Bayle, that the adhesions may occur early in the course of the disease, and may remain a long time inactive in the production of symptoms. That only the *summits* of the gyri are usually the seat of the adhesions, the elder Foville explained by their being the parts most exposed to the immediate effects of the compression resulting from

* This term, "adhesion and decortication," will be employed throughout this paper as an abbreviated description of the complex morbid condition mentioned in the text. "Decortication" I hit upon as a convenient descriptive term in note-taking, but afterwards found that the French equivalent had been used long ago by Parchappe in a similar sense.

inflammatory turgescence of the brain, in the early stages of general paralysis. Able papers on these adhesions have recently been published by Drs. Crichton Browne and Ach. Foville (*films*).

But the adhesions in question, and the associated changes wrought in the corresponding portions of the grey cortex are not invariably present in general paralysis, and they constitute but one of the points to be examined in investigating the anatomical distribution of the more extreme degrees of morbid change in individual cases of that disease. The other conditions of the grey cortex must also be particularly observed, the portions of it earliest or most specially attacked must be sought for, and its state, both general and local, as to vascularity, consistence, bulk, pathological products, and degeneration, examined. An investigation of the same kind must be directed to the series of central ganglionic masses near the base of the brain, to its medullary substance, to the bulbar tissues, to the cerebellum, and to the spinal cord and its meninges, as well as the sympathetic ganglia. So also must be taken into account such secondary products and complications as excessive serosity, arachnoid hæmorrhage and cysts, piamatral hæmorrhage, local pachymeningitis, local ramollissement.

Finally, there is required a careful microscopical examination of the nervous systems of a large number of general paralytics, carefully compared with detailed records of the clinical features observed in each. My leisure has been insufficient for this undertaking.

But I have observed such marked differences visible to the naked eye, or obvious upon making a less elaborate or extensive microscopical examination, that it seems to be desirable to place some of the cases on record, grouping them according to certain differences in the pathological lesions of the encephalon, and to indicate the clinical features which in their totality constitute, as it were, the garb each group severally wears. I have long thought that under the name general paralysis (of the insane) were included several pathological varieties, in a manner analogous to, but less decided than, that by which formerly the name "pulmonary phthisis" shielded several varieties of pulmonary disease; and by which, again, "Bright's disease" included a number of more or less distinct morbid states. I do not offer the following groups as representing proved varieties of general paralysis, or even as by any means covering the whole of the

ground in their clinical aspects. But if we can show that in general paralysis cases can be placed in groups, the members of each of which have a considerable similarity to each other in their symptoms, course, duration and pathological anatomy, then has a step been taken in the direction of establishing pathological varieties of that disease. Some accident or intercurrent malady may cut off a general paralytic before his time, and the pathological lesions may appear different from what they would have been had the affection run its usual course. This is, of course, true of all maladies. Avoiding such fallacies as would arise, for example, from considering that in the same case ending untimely or ending maturely we had two varieties, it is possible, I believe, to indicate several groups which possess a certain individual distinctness. Five of these will now be referred to. It is not meant that the essential pathological process is distinct in each. The separation between some of them is mainly based upon the differences in the encephalic localities affected in each (3 and 4). In another instance (group 2) the difference seems to be mainly one of chronicity and mildness; but also of locality. In another (5) the local cortical induration appears to indicate a local morbid process, differing somewhat from that which is at the basis of the more usual change of the same part in general paralysis. All of these patients were soldiers.

Group I.

The first group consists of cases in which the changes are symmetrical in the two cerebral hemispheres, and affect the grey cortex principally, but also parts of the whole encephalon more or less. The changes are very general in the peripheral grey matter in this group, yet the superior and lateral fronto-parietal regions especially suffer. The basal ganglia, mesencephalon, medulla oblongata, and spinal cord, usually show some degree of change similar to that of the cortex and medullary substance of the brain. To speak more particularly—the coarser changes of the encephalon are especially hyperaemia, and more or less diminution of consistence of both grey and white matter of the cerebrum, and to a less extent, generally, of the cerebellum. This hyperaemia and softening are particularly seen in the frontal, parietal, and to a less degree (at least, the hyperaemia is less) in the temporo-sphenoidal regions, and are often well seen over the internal surface of each hemisphere, especially the anterior

two-thirds of that part of it lying above the calloso-marginal fissure. A similar vascularity and diminution of consistence implicates the corpora striata, optic thalami, and sometimes the pons and medulla oblongata also. There is adhesion of meninges to, and decortication of, the cerebral hemispheres, usually well marked, almost always nearly symmetrical on the two sides, mostly confined to their superior and lateral surfaces, particularly well seen over the frontal lobes, well seen on the parietal, in a less degree and frequency over the temporo-sphenoidal, and sometimes existing to a slight or moderate extent on the internal and inferior surfaces of the hemispheres. The cerebellar pia mater and cortex usually exhibit something of the same change. The meningeal changes (increased thickness, density, opacity, and vascularity) are fairly symmetrical over the two cerebral hemispheres; are, as usual, most marked over their convexities, and particularly over the superior and lateral surfaces of the fronto-parietal regions, but often are seen slightly developed at the base also. Arachnoid or sub-arachnoid hæmorrhage, is not unfrequent in this group.

Clinically it presents the following features, which are here merely in outline. As compared with the average duration of general paralysis that of the cases belonging to the first group is short, and in the seven cases before me was about eleven months. But this does not include the stage of mental alteration (first stage) preceding, in several, the condition *recognised* as insanity. The true average total duration in this group would, therefore, be some months longer. The intellectual symptoms possess the following characters—(1) They are varied, and of a changeable nature. (2) Extravagant or exalted delusions are frequent, but in some there is scarcely more than a smiling, self-satisfied, pleased appearance and behaviour; in others the occasional expression of delusions of exalted nature without any apparent exaltation of feeling. (3) Maniacal symptoms, the patient being restless, excited, noisy, and sleepless. (4) Early dementia occasionally predominates, while in some towards the last a certain marked increase of dementia sets in, although most die before an extreme degree of dementia, or amentia, is reached. (5) In about one-fourth of the cases there is, during part of the course of the malady, mental depression with hypochondriacal, melancholic, or even suicidal ideas.

The emotional state is generally (1) variable, (2) mainly one of exaltation, varying from exulting joy to quiet self-

satisfaction; or, far less frequently, of (3) depression, or of (4) inertia.

Troublesome and mischievous, the patients also often express benevolent intentions, absurdly misplaced, and beyond their means. Some are passive in this respect. Others are proud, selfish, haughty, or abusive, hostile and obstinate; and, especially in the later stages, the habits are often degraded.

In the earlier stages the muscular incöordination and paresis is sometimes masked by the maniacal excitation, or is sometimes imperfectly developed even in the absence of this.

Besides the paretic state of the tongue, lips, face, and extremities, there is in the cases of this group frequently motor restlessness, or even agitation; occasionally epileptiform or apoplectiform attacks; now and then symptomatic paralysis agitans, or movements of a more chorëiform nature.

Hallucinations of sight and hearing occur at times in the earlier stages. Defective sensibility, general, or special, as of sight or hearing, often occurs later on. Now and then one finds evidence of morbid visceral sensations. The patients generally die comatose.

Complications, such as bedsores, cutaneous hæmorrhagic maculæ and lichen, carbuncle, and syncopal attacks, are found in varying frequency. Thus far the first group.

There is a larger group which appears to represent a later stage of a very similar pathological process, that in which the hyperæmia and softening are less marked or scarcely exist, in which the distribution of the several changes, both cerebral and meningeal, is much the same as in the first group, but in which these changes are of less intense activity and slower evolution, while the clinical features are much the same, but are usually spread over a longer period. It differs, therefore, from the first group principally in the greater mildness and chronicity of its lesions and symptoms. The full clinical and necroscopic records of eleven cases of this kind are before me, but will not be further referred to here, for it has been thought much better to describe the cases, such as those forming the first group, which possess the more strongly marked and characteristic features. The average duration of the eleven cases just mentioned was twenty months.

Second Group.

The second group contains cases in which the lesions were of a very chronic nature. In several the general atrophy of

the brain, predominating in certain regions, was very considerable. The amount of serum that drained away during removal and dissection of the brain was unusual. It flowed from the arachnoid cavity, filled up the enlarged cerebral ventricles, and waterlogged the meninges. The meningeal changes, the thickening, opacity, and increased density, so common in the older cases of general paralysis, were here very decided, were widely distributed, and, while most marked over the superior surface, as is always the case, affected the temporo-sphenoidal lobes, and the basal regions, more than usually. The gyri of the cerebral surface were wasted, especially on the superior aspect, and in or near the frontal region. The atrophied grey matter was either softened, or occasionally of about the normal consistence, and was pale, watery, sodden; nevertheless, scattered, dilated, blood-containing vascular channels were seen in some, and passive congestion brought some up to an appearance of ordinary vascularity. The white substance of the cerebrum, softened in some cases, was indurated more or less in others, and, although often presenting dilated vascular channels or perivascular spaces, and, at times, mottled by irregular vascularity, was, as a rule, unduly pale and exsanguine. When the white substance was indurated the grey matter sometimes peeled off from it as an almost entire layer, with but little trouble. The ventricles of the brain were dilated, and contained an undue amount of serum; their lining membrane was thickened, opaque, and beset with "epithelial granulations." The adhesion of the pia mater to the surface of the brain, and consequent decortication, were, as a rule, nearly or fairly symmetrical in the two hemispheres. Of the five, to be detailed elsewhere, this compound change was somewhat more extensive or decided in the right hemisphere in two cases, in the left in two, and symmetrical in one. As a rule, it was present only in a comparatively slight or moderate extent. Whilst the upper convexity was sometimes more or less implicated, yet the general tendency seemed to be for the parts bordering on the Sylvian fissures to be affected, sometimes alone, sometimes associated in pathological suffering with parts of the superior surface of the frontal lobe; or, again, with points at the mid vertex. Inferiorly the orbital, and especially the inferior temporo-sphenoidal surfaces, were apt to be slightly or moderately affected by the adhesion and decortication. The basal ganglia were generally pale, softened, flabby, or atrophied; the cerebellum, pons Varolii, and

medulla oblongata were generally pale, softened, and their meninges thickened; the spinal cord, generally softened, was occasionally indurated in parts.

Clinical features. The cases are of long duration, the *average* being four years.

The intellectual symptoms vary at different periods of the long course of the affection, but, whatever may have been their leading characters, they end in a very protracted stage of incoherent or almost speechless dementia, often relieved by attacks of intercurrent excitement, in which the patients are noisy and restless, or by intercurrent hypochondriacal symptoms. During the earlier periods there are often exaggerated notions, extravagant projects, or exalted notions of personal prowess. These are often associated with excitement, and with oddity of action and demeanour. Occasionally the dementia is predominant from the first; in all cases it reigns supreme during the long later periods.

The patients exhibit a quiet self-satisfaction at the first, or else are emotionally neutral. Later, they are usually from time to time, or constantly, apprehensive, morose, peevish, or distressed.

At first occasionally dangerous or secretive, they soon become indifferent to their foulness of habit, have lost all sense of shame and of propriety, and frequently are destructive, obstinate, and given to the foulest and most abusive language. At last the moral nature becomes a blank, and some become excessively brutish.

The ordinary physical signs of defective power and co-ordination of the muscles of tongue, lips, face, speech, and locomotion are of comparatively slight or moderate development, and of slow progress. Gradually they become more marked, especially in the lower extremities. Occasionally there is great motor restlessness. The patients, if carefully nursed, generally survive for a long time in the bedridden stage. They then still continue to grind the teeth, and usually are speechless, or speak but rarely.

They are peculiarly free from the epileptiform and apoplectiform attacks, so common in general paralysis, throughout the course of their malady. Spasmodic symptoms, or tremor of the kind seen in paralysis agitans, or general convulsive restlessness, are absent, as a rule. The comparative absence of symptoms of this kind is a distinguishing characteristic of this group.

Among the complications are such accidents as othæma-

toma, furuncles, bedsores, pulmonary lesions, spinal tubercular meningitis, embolism from ulcerative endocarditis.

Third Group.

The next class of facts to be mentioned here consists of cases in which the morbid lesions affect one cerebral hemisphere very much more than the other, and, therefore, may be conveniently subdivided into two groups, according as one or the other hemisphere is especially diseased. That this subdivision is desirable will be evident from a consideration of the marked clinical differences between the two groups. The first of these (group 3) comprises the cases in which the *left* was the hemisphere mainly affected. The second (group 4) will be devoted to those in which the *right* hemisphere more particularly was diseased.

Third Group.—In these cases the meningeal changes (lesions of chronic meningitis of Bayle) are generally well marked. They are either symmetrical or predominate over the left hemisphere, and *are often well seen at the base*. But when symmetrical it is usually only some of these changes that are so. The left side of the arachnoid cavity and subarachnoid space usually contains more serum than the other, and especially is the adhesion of the pia mater to the cerebral cortex apt to be found in the left hemisphere. The adhesion and decortication are found with about equal frequency and extensiveness on the parietal and frontal lobes, while the temporo-sphenoidal frequently suffer considerably, and the adhesions may be well marked on the inferior cerebral surface. The right, affected to a less extent, has adhesions mostly, perhaps, on the frontal lobe and superior surface. The grey matter is sometimes unduly softened, or, on the other hand, it sometimes suffers an increase of consistence in parts, or this change affects one, two, or more lobes, gradually shading off to the normal consistence, or to softening. The softening, or induration, whichever it may be, is more marked in the left hemisphere, and the frontal lobe is the part most affected, generally. The cortical grey matter, especially the left, is almost invariably atrophied. The wasting particularly affects the frontal lobes, or, at times, has other sites as well, as, for example, about the parieto-occipital fissure, in one case. The appearance of stratification is often lessened, universally or locally. When not ordinary, the colour of the grey matter is more often pale than deep. Its vascularity is often patchy,

areas of red or pink hue contrasting with and mottling the otherwise somewhat anæmic sections.

The predominance of these changes in the grey matter of the left side, associated with the greater amount of adhesion and decortication of the left hemisphere, imprints decided characters on the morbid anatomy of this group. And the impression becomes still more decided when one observes the general shrinking and atrophy of the left, in advance of any change of the same nature in the right hemisphere, and when one opens up the more capacious left lateral cerebral ventricle, and, after permitting all fluid to drain away, finds the left hemisphere from one to three ounces below the right in weight. The enlarged ventricles have the ependyma granulated, the basal ganglia are hyperæmic, occasionally pale or softened, whilst both the consistence and vascularity of the pons, medulla oblongata, and cerebellum are sometimes either increased or lessened.

Clinical Aspects.—The duration is on the average rather less than that usual in general paralysis, being about 17 months, including the stage of decided mental alteration.

When mental disease has become openly developed the patient at first is often restless, fidgety, or the subject of occasional excitement. There is often marked early dementia, though not as the sole mental condition. This was observed in three of the cases to be described hereafter. In three cases were early features of the melancholic type—delusions of personal harm, annoyance, or fear, or suspicion. In one was early maniacal agitation, in another exalted delusions, and in another early mania followed by dementia. Generally the patients passed after a time into a condition of very marked stupidity or dementia, with a dash either of melancholia, or, in the early period, of extravagant delusion.

In three the emotional state was evidenced mainly by fear, alarm, apprehension, or querulousness, or dejection and lamentation; in two there was choleric irritability in the early periods; and one showed transient fits of irascibility, especially in the later stages.

Early hostility and occasional tendency to attack those about them were sometimes observed; some were destructive and threatening at times; most were unusually docile and tractable, for general paralytics, when they had arrived at the third stage, but seemed to be insensible to their own wet and dirty habits.

The muscular ataxy and paresis as evidenced in tongue,

lips, speech, and gait were well marked. *Hemiplegia*, usually temporary, more or less marked, and evinced on more or less frequent occasions, *was present in every case*. Besides this there were in some more limited temporary palsies of varying degrees of completeness. Sometimes motor restlessness was a prominent symptom. Contractions of the limbs were frequent, and at the last the patients were usually bedridden for a time.

The convulsive phenomena were well marked. Epileptiform convulsion, hemispasm, more localised spasmodic action, tremor coactus were extremely frequent. Epileptic hemiplegia often followed the convulsions, or more limited palsies the spasms. Besides the apoplectiform attacks occasionally seen, there was once aphasia observed.

Two had hallucinations of special senses, one of sight, one of hearing. Occasionally there was severe early headache. The general sensibility of most became obtuse; occasionally local anæsthesia of a more decided nature was found. Now and then apoplectiform attacks of stupor occurred in the middle and later stages.

Among the antecedents, in individual cases, were tropical exposure, syphilis, temporary palsy; among the complications were bedsores and abscesses, valvular cardiac disease, modified "respiration of ascending and descending rhythm."

Fourth Group.

In this group the disease-changes mainly affected the *right* cerebral hemisphere, and, on the whole, produced the same effects as were observed in the third group, except that the pathological description of the *left* hemisphere in the third group must here be transferred to the *right*, and *vice versa*. It may be briefly stated that the right hemisphere showed predominating general atrophy, with thinness of grey matter, increased size of right lateral ventricle, and less weight. The right grey cortical substance was particularly the seat of any undue softening or hardening, and usually was less vascular than the left, and in fact sometimes rather pale. As to the change involving adhesion and decortication that was absent in one case, in two was decidedly more on the right hemisphere, and in two of about equal extent on the two sides. It was mostly on the parietal convolutions, often on the posterior part of the frontal lobe, often on the temporo-sphenoidal, and occasionally on points of the internal

surface or of the base. The meningeal changes, viewed from the exterior of the brain freshly removed from the skull, were most marked over the superior and lateral surfaces, but were sometimes well seen over the internal surface, and observable at the base. Ventricles sometimes large and ependyma thickened; fornix at times softened; the basal ganglia generally hyperæmic and sometimes flabby, the right occasionally pale; the pons and medulla oblongata hyperæmic or the reverse, varied in consistence; the cerebellum generally rather soft and more often pale than hyperæmic; and the spinal cord often changed in consistence, and its meninges thickened and dense.

Clinically, the cases were of medium or rather long duration, the average being 24 months, during $17\frac{1}{2}$ of which the symptoms were very highly developed. In one the disease showed itself first in eccentricity of conduct whilst in prison for an offence against military regulations, and others were noticed to be strange and peculiar for some time before insanity was recognised as such. The recognised insanity generally began with ambitious delirium, with or without active maniacal agitation accompanied with violent, destructive, and dangerous acts. Once there was principally great complacency and self-satisfaction—once dementia, with restless, fidgety, slovenly, mischievous, destructive, and wandering habits, and incoherence in conversation. Later, there were often exaggerated or exalted notions, the expression of which was mingled with abusive, querulous, or obscene and profane utterances. Two were utterly fatuous and speechless towards the last.

As to the emotional state there was early complacency, elation, or exaltation, and later on there were some of the same conditions, but now alternating with irritability, moroseness, and querulousness, or depression, or dread, or with simple dissatisfaction.

In the early period there was sometimes the expression as of generous impulse. Often, besides being foul-mouthed, they were dangerous, destructive, and filthy.

The muscular paresis as shown in speech and gait was of the ordinary development. Occasionally much tremor or even symptomatic paralysis agitans was found. In four out of five, hemiplegia (mostly epileptic h.) occurred, and two were speechless at the last. Paralytic attacks were frequent in some of the cases, *i.e.*, sudden hemiplegia without convulsion, and generally with no, or but slight and transient, affection

of consciousness. In one was hemiplegia from cerebral embolism, and in another hemiplegia from meningeal hæmorrhage. Convulsive fits were frequent, were of an epileptiform nature, and often followed by paralysis. One had a prolonged lethal attack of general convulsions, dying in the epileptic status.

One had hallucinations of sight and hearing, two suffered from hypochondriacal sensations, and one became blind. In most the general sensibility became blunted as the disease advanced.

One had an antecedent epileptic attack. The complications, in several cases, were othæmatoma, brittleness of bones in one case leading to fracture of several without external violence, cardiac disease, acute herpes evidently of spinal origin, great constipation, respiration of ascending and descending rhythm, embolism of left middle cerebral artery, and right-sided sub-arachnoid hæmorrhage.

Thus it will be noticed that some of the clinical features are very dissimilar in the third and fourth groups; mental symptoms like those of dementia, hypochondria and melancholia predominating when the *left* is the hemisphere principally diseased; and exalted delusion and maniacal agitation when the *right* is the hemisphere in which the morbid process is earlier, and more extensive, severe, persistent, and disorganising.

Fifth Group.

The cases of this group were principally distinguished by the presence of local induration of the cerebral cortex. Two of the third group belong to this one also.

The thickening, increased density, opacity and œdema of the soft meninges were well marked, were, as usual, greater over parts of the cerebral convexity and internal surface, but were found more than usually over the base, especially about the interpeduncular space. In some cases the dura mater was slightly thickened, and the development of "arachnoidal villi" considerable.

The adhesion and decortication were absent in one case, in two were more on the left hemisphere, in one slightly more on the right, and in one about equal on the two sides. The parts mostly affected thereby were the parietal, then the frontal (especially its posterior portion) and temporo-sphenoidal, occasionally the internal surface, occasionally the inferior surface also, and in one case most markedly so.

The induration and other changes of the cortex were as follow in the several cases.

In the first there was marked induration of the grey cortex, almost limited to the right frontal lobe, although there was a slight induration of the cortex of somewhat general distribution. The grey matter of the right frontal lobe was thin, atrophied, red, and had many visible vessels. The rest of the cortex of the right hemisphere behind the frontal lobe and the whole of the cortical grey matter of the left hemisphere were of somewhat ordinary appearance, of a fawn tint internally and grey externally, and were of greater depth and softer than that of the right frontal region.

In the second there was induration of the cerebral cortical grey substance in the superior and lateral frontal and parietal regions, shading off backwards and downwards to the normal consistence at the occiput and at the base: the grey matter generally was pale, especially the inner three-fourths of its depth, and yet had a streaked and mottled appearance from visible vessels. Grey cortex pale at the base of the brain.

In the third the induration of the cerebral cortex was comparatively slight, and affected the superior and lateral surfaces of the frontal and parietal lobes especially, diminishing behind and below these parts. The cortical grey matter was also thin, red, containing many visible vessels, and these changes were of the same comparative distribution as that of the induration mentioned above.

Fourth Case.—There was slight induration of the deeper layers of the cortex generally, and especially in the frontal lobes, and of these especially in the left frontal lobe, and of this especially in the third left frontal convolution. With greater induration was greater pallor, the cortex generally being somewhat pale, and the greater induration of the left than of the right frontal being also associated with a greater pallor of the left than of the corresponding part of the right grey cortical substance.

Fifth Case.—The induration of the grey cortex in this case was only in the left cerebral hemisphere, diminishing from the frontal lobe backwards to about the normal consistence at the occiput. On the left inferior surface, proceeding from before backwards, the orbital grey matter was somewhat indurated, then the grey matter of the temporo-sphenoidal was softened, and then, again, behind that and over the tentorium it was normal or slightly indurated. On

the left side the cortical substance was of a dull reddish-pink colour over the whole superior and lateral surfaces of the cerebrum, except the upper halves of the ascending frontal and parietal convolutions. The right cortical substance was of the same hue in the frontal lobe only, and of this limited space the redness was absent at the ascending frontal and at the posterior part of the third frontal convolution. But the anterior inch and a-half of the inferior surface of the right temporo-sphenoidal lobe exhibited the same red colour of the cortical substance. Elsewhere this substance was of the ordinary hue.

So much for the cortical substance. The medullary substance of the brain was often somewhat firmer, occasionally softer than natural, of medium or lessened vascularity. The basal ganglia were often somewhat shrunken and pale; the pons and medulla oblongata sometimes firmer than usual, and their meninges sometimes thickened, and once there was softening and granular and colloid degeneration of the spinal cord.

Clinical Features.—The average duration was rather long, being 23 months.

The intellectual aberrations or defects were varied and varying. One was mainly maniacal and the subject of exalted delusions. Two were principally demented, and of these one was so throughout, and in one dementia was mingled with maniacal symptoms. Two were melancholic; of these the melancholia was early in one and followed by dementia, in the other the melancholic symptoms were associated with marked dementia from the first.

In three there were passionate outbursts of temper at some periods; in two slight complacency; in one exaltation; in two more or less gloom, depression and apprehension.

Most became quite indifferent to propriety, and their habits were wet and dirty. Some were docile throughout; others were either quarrelsome, abusive, and foul-mouthed, or, again, passionate and destructive, but later docile.

The paretic signs (speech, gait, &c.) were fairly well marked; once they occurred only late, but then in a very marked degree. Generally at the last the patients became bedridden, and had flexed contractions of the limbs.

Epileptiform convulsions, hemispasm, and more limited convulsive spasms were frequent, and were often followed by epileptic hemiplegia, or by more partial palsies. Hemiplegia indeed generally followed any convulsion at all severe.

Apoplectiform seizures occurred also, either alone or associated with more or less of convulsive movement. Choreiform movements occurred in two, and in one there was tremor of the kind seen in paralysis agitans.

Two suffered from hallucinations of hearing, and one of these had also hallucinations of sight. Three had attacks of heavy drowsiness and semi-stupor; two had marked anæsthesia; and one severe, early, and protracted cephalalgia.

The complications were as follows:—Bedsores in most. In two cases each, othæmatomata, syphilis, pulmonary lesions, very slow and feeble circulation towards the close. To these add the following:—In one case each, respiration of ascending and descending rhythm, cardiac disease, diarrhœa.

In order to place the above facts in a concise form, we will now recapitulate the principal points relating to the several groups.

First Group.—Principal Changes.

1. Hyperæmia and softening, more than usually generalised, but particularly affecting the cortical substance of the superior, lateral, and, to a less extent, internal, frontoparietal regions.

2. The cerebellum is usually affected in a considerable degree, so are the basal ganglia, while the mesocephale and spinal cord also are apt to suffer, but in a less degree.

3. Adhesion and decortication are usually well marked, mostly confined in the cerebrum to the upper and lateral surfaces, particularly well seen over the frontal lobes, well seen on the parietal, less over the temporo-sphenoidal, sometimes slightly or moderately over internal and inferior surfaces. The cerebellum is often affected with adhesion and decortication.

4. The above changes are nearly or quite symmetrically disposed in the two hemispheres.

Principal Clinical Features.

1. Variability of mental symptoms, both intellectual, emotional and moral.

2. Exalted or extravagant delusions are the most marked feature, while maniacal excitement and insomnia are frequent.

3. Gaiety, self-satisfaction, benevolence or pride; or the patients are selfish, haughty, hostile, obstinate, abusive; or destructive, untidy, and the habits often filthy.

4. Transitory depression or melancholia sometimes comes on.

5. Dementia is occasionally the predominant mental character from the first.

6. Motor paresis and ataxy, sometimes well-marked, but often masked by the maniacal state, or but imperfectly developed in the earlier period. Motor restlessness frequent.

7. Occasionally epileptiform or apoplectiform seizures, choreiform movements, or tremor coactus.

8. Now and then hallucinations of hearing or of sight. Later, defects of general or special sensation, or hypochondriacal sensations.

Second Group.—Principal Changes.

1. Atrophy of brain, considerable increase of intracranial serum, ventricles dilated and much granulated. The gyri of brain wasted, especially on the upper surface and at the frontal region, the corresponding grey cortex being either softened or occasionally of about normal consistence, pale, watery, sodden, or at times of fair colour, or even mottled by irregular hyperæmia.

2. The white cerebral substance, softened in some cases, more or less indurated in others, usually tends to pallor.

3. Adhesion and decortication, usually slight or moderate here as compared with the other groups, are principally at (1) the Sylvian fissures, (2) upper frontal, and (3) parietal surfaces, (4) base (orbital or temporo-sphenoidal).

4. Basal ganglia generally pale, soft, shrunken; pons and med. obl. pale and soft; spinal cord softened or indurated.

5. Meningeal changes very marked and extending to the base, and, like the other changes, symmetrical.

Principal Clinical Features.

1. The mental symptoms in the earlier periods may be exaggerated notions, or paroxysmal excitement with strange demeanour, or, though rarely, exclusive dementia predominating from the first. Finally, a protracted stage of dementia in which fitful outbursts of excitement or hypochondria may occur.

2. The quiet self-satisfaction or the negative emotional state of the early periods is usually replaced by morose, peevish, distressed or apprehensive states of feeling, and these by obliteration of the emotional life. Foul habits, often destructive, obstinate, abusive, brutish.

3. Motor paresis is comparatively slight in the earlier stages, and of slow progress, gradually becoming more marked,

especially in the lower limbs. The patients are usually bed-ridden a long time, and often grinding their teeth.

4. Peculiar absence of epileptiform and apoplectiform seizures, and of marked general tremulation.

5. Peculiar absence of sensory symptoms, save for blunting of sensibility as the disease progresses.

Third Group.—Principal Changes.

1. The left hemisphere is much more diseased than the right, and is more or less atrophied.

2. There is usually atrophy of the cortical substance, most marked in the frontal lobes, but occasionally marked elsewhere. It is usually pale, or pale and mottled by vascular redness, and is sometimes softened, at others indurated in a portion of its extent, either change being much more marked in the left hemisphere, and the frontal lobe being usually most affected. White substance varying in consistence and vascularity.

3. Adhesion and decortication usually more on left side, with equal frequency on frontal and parietal lobes, while the temporo-sphenoidal suffer very considerably, and the changes in question may be well marked on the inferior surfaces.

4. The basal ganglia softened, and their vascularity altered either way, as are also the vascularity and the consistence of the pons, medulla oblongata, and cerebellum.

5. The purely meningeal changes are generally well marked, are either symmetrical or predominate over the left hemisphere, and are often well seen over the base.

Principal Clinical Features.

1. In the stage of mental alteration, preceding that of mental alienation recognised by the friends as such, the patients often are very eccentric, odd, restless, fidgety, and occasionally excited.

2. Dementia, well marked, early and predominant is frequent.

3. Melancholic delusions of harm, annoyance, fear, suspicion, are equally frequent, and with them are feelings of alarm and apprehension, or the patient is querulous and irascible, or dejected and weeping.

4. Occasionally there is early maniacal excitement, with irritable passionate outbursts, while exalted delusion or some largeness of idea now and then occur either at an early or at a later period.

5. The later course is generally one of extreme dementia, sometimes with a dash of melancholic or even extravagant delusion.

6. Sometimes destructive, threatening, or violent, the patients generally become tractable towards the last, but of degraded habits.

7. Muscular ataxy and paresis well marked, motor restlessness frequent. Finally, bedridden with flexed contraction of limbs.

8 *Hemiplegia* more or less marked and frequent in all, generally epileptic in origin, while more limited temporary palsies following local spasmodic movements are frequent.

9. Epileptiform attacks, hemispasm, local spasm, very frequent; and tremor coactus not unfrequent. Apoplectiform attacks and aphasia are sometimes observed.

10. Occasionally hallucinations, general obtuseness of sensibility, or local anæsthesia.

Fourth Group.—Principal Changes.

1. The morbid lesions are much more marked in the *right* than in the left cerebral hemisphere. The general description of the changes in the left hemisphere in the last group is here transferred to the right, and of the right in the third group to the left in this. The cerebral vascularity was, however, rather greater in this fourth group.

2. The adhesion and decortication are usually more marked in the right hemisphere, occur mostly over the parietal lobe, often on the posterior part of the frontal and on the temporo-sphenoidal, and occasionally upon points of the internal surface or base.

3. The other changes are much as in the third group.

Principal Clinical Features.

1. Occasionally preceded by a history of strangeness and peculiarity of conduct, the outbreak generally begins with ambitious delirium, with or without active maniacal agitation, and violent, destructive and dangerous tendencies. At first there is usually complacency, elation, or exaltation of feeling.

2. Now and then dementia, with fidgety, mischievous, restless, slovenly, or destructive tendencies.

3. Later, there are often exaggerated or exalted notions, alternating with conditions in which the patients are foul-mouthed, querulous, morose, irritable, depressed, or in dread; or the latter states come to predominate entirely.

4. At first there may be the expression of an undiscerning generosity, which is replaced later by an abusive and foul manner of address, often with degraded habits, and destructive or dangerous tendencies.

5. The muscular ataxy and paresis are of the ordinary type. Occasionally there is great tremulousness, or, again, tremor as in paralysis agitans. Hemiplegia is frequent, sometimes occurring as a simply paralytic seizure, sometimes following epileptiform attacks, and sometimes due to embolism, or hæmorrhage.

6. Epileptiform seizures are very frequent.

7. Sensation is blunted in the later stages; occasionally there are hallucinations of sight and hearing, blindness, or hypochondriacal sensations.

Fifth Group.—Principal Changes.

1. Local induration of the cerebral cortex, sometimes of wide distribution in its lesser degrees, most marked in the frontal lobes or their anterior portions, and affecting either one hemisphere or both.

2. The indurated cortical substance, generally of a decided reddish colour, was occasionally pale. It was usually atrophied. The non-indurated cortical substance was of ordinary colour, or pale.

3. The white substance, generally of slightly increased consistence, may be fairly vascular, or paler than usual.

4. The adhesion and decortication, absent in one case, were in others unequal in the two hemispheres, occurred mostly on the parietal, often on the posterior part of frontal, and on the temporo-sphenoidal, now and then on the internal surfaces, and in one case were highly marked on the inferior surface. Generally there were changes in the parts at the base of the brain and in the spinal cord.

5. The purely meningeal changes were well marked, and of very wide distribution.

Principal Clinical Features.

1. Mental symptoms various and varying. Some suffered mainly from symptoms of mental depression, others of dementia, and others of maniacal agitation and emotional exaltation.

2. Complacency, passionate irascible outbursts, gloom, depression, or apprehension were observed in various cases.

3. All were indifferent to their degraded habits, and some

were docile throughout, but others were at some periods either destructive, or quarrelsome and abusive.

4. Muscular ataxy and paresis fairly marked. At the last the patients were usually bedridden, with flexed contractions of the limbs.

5. Epileptiform fits, hemispasm, often followed by epileptic hemiplegia, were very frequent. Local spasms, followed by more limited incomplete palsies, were not infrequent. Sometimes tremor coactus, or, again, choreiform movements were observed, or apoplectiform seizures, some with, some without convulsive movement. Besides these, several had less grave attacks of heaviness, drowsiness, and semi-stupor.

6. A few showed hallucinations of special senses, or marked anæsthesia, or early headache.

Concerning the above groups of cases, a few words may be added:—

The *first* consists of cases of a very common kind, illustrations of which are abundant in medical literature. Bearing in mind that it represents the shorter and more acute cases of a larger group, it may be passed without further comment.

But not so the *second* group, in relation to which some will, perhaps, raise objections. Possibly some would call these cases atrophy of brain, or chronic hydrocephalus, or chronic meningitis, but I think an attentive study of the clinical features and necroscopic records will suffice to justify the position in which they are placed here. Bayle fully described cases of this kind, and several of them may be found in his second series (*Traité*, etc., 1826, p. 98). Drs. Baillarger and Lunier distinctly assert a place among general paralytics for cases somewhat similar. But those to be detailed hereafter as composing our second group will be found to approach much nearer to the typical cases of general paralysis than to the hydrocephalic, and other cases just referred to. In fact, out of a large number of cases, a series could be selected, which, by gentle gradations, would lead the steps from this group up to the most characteristic and typical case of “ambitious monomania, with general incomplete paralysis.”

The *third* group, with its less usual symptoms, is relatively infrequent. The symptoms are not at all constant, nor is this to be wondered at, as the principal lesions may be brought about in different ways. Turning to Calmeil’s work (1859) I find that his cases with lesions, somewhat like those of group 3, presented also clinical features, on the

whole very similar to those of the latter. [Vol. I., pp. 385, 554. Vol. II., pp. 27, 53, 76, 89.]

To the *fourth* group the same general remarks apply. The several cases in Calmeil's work, presenting somewhat similar lesions, were also, on the whole, manifested by very similar symptoms, except that in the group from Calmeil, attacks of apoplexy and stupor and of spasmodic twitching were more frequently observed.

In the *fifth* group the interstitial changes tend to sclerosis. The pathological process is different in its results from that which produces the more ordinary softening of general paralysis, and is expressed in clinical features which bear the impress of a kind of individuality. And this, notwithstanding the view of some, that the pathological process is really the same in the two cases. This group, however, is not so well defined, clinically, as the others, and I do not lay special stress upon it. I find that Calmeil's cases, with somewhat similar lesions, exhibited also a clinical similarity to those of the fifth group, but, as compared with the latter, presented more of violent maniacal excitement, and délire ambitieux, and exaltation; less sadness, less epilepsy followed by hemiplegia, and somewhat less spasmodic twitching and tremor cöactus. (Vol. I., pp. 311, 431, 437, 519, 571, 581, 591, 658. Vol. II., pp. 5, 60). Otherwise, as in frequency of attacks of apoplectiform nature, somnolence, stupor, the two groups are very similar.

I am quite aware it may be said that the *mental* differences to which I have referred in the above groups do not mark any essential differences in the cases, that for example it may be urged that the grandiose delirium is, in reality, only a manifestation of that dementia which, on the mental side, appears to be of the essence of the affection. Such, indeed, was the view of the elder Foville, Baillarger, Lunier, and others, while that of Guislain, or that of Billod, was not very dissimilar. I am content to record the facts as I find them, believing that differences in the *mental* symptoms of general paralysis, though not essential, are yet of valuable import.

The views expressed in this paper are based simply upon the clinical and necroscopical observation of a number of cases; upon the fidelity of this they must stand or fall; nor need one be concerned to trace a harmony or discord between the facts mentioned above and the conflicting results of experiments on the localisation of cerebral function.

Spurious Hydrophobia in Man. By W. LAUDER LINDSAY, M.D., F.R.S.E., Physician to the Murray Royal Institution, Perth.

(Continued from Vol. xxiii., page 559.)

Metropolitan (English) cases of spurious hydrophobia are both less numerous and less instructive than those that occur so frequently in the Midland counties and their great cities, especially in Lancashire, Yorkshire, Warwickshire, Derbyshire and Staffordshire. But some of the London cases are, nevertheless, full of interest. Thus, death from a *cat-bite* formed the subject of an inquest at the St. Pancras Coroner's Court, in April, 1877. The deceased was a woman of 64, who was described as naturally irritable and nervous, and who was sent to the insane ward of the St. Pancras Workhouse in a "state of *mania*.....on account of her madness." And there she "died from congestion of the lungs, brought on by hydrophobia"—said the verdict.*

In a fatal case, narrated by Dr. Partridge, "several of those who were with (the patient) during the attacks, complained of shooting pains in the arms and fingers for weeks afterwards;" while, "with the belief common amongst the public, (his wife or mother) poisoned (the dog that had bit him,) thinking that by so doing the person bitten would not be affected."†

The dog in question had bitten several other persons without in them any ill effect.

A child of five years of age that was taken to St. Bartholomew's Hospital, in 1876, in a state of hydrophobia from *cat-bite*, "seemed suddenly to go *mad*, and was taken to the hospital in a raving state." There is reason here to suspect the operation of the sensational element in public journalism; for acute mania at so early an age is, at least, extremely rare. The child died in and by convulsions; as was the case also in a boy of 10, in the same hospital, during the same month (October)—the cause of the disease in his case being, however, dog-bite.‡ A youth bitten by a *cat*, and who died of hydrophobia at Kemsal, on the border of Notts, "bit and scratched every one near him."§

* "Daily Telegraph," April 13, 1877.

† "British Medical Journal," Feb. 8, 1873, p. 142.

‡ "Daily Telegraph," Oct. 13, 1876.

§ "North British Daily Mail," Feb. 26, 1875.

Of *Provincial (English)* cases of spurious hydrophobia, the following are the most interesting that have occurred during the last few years:—

“If we may trust the report of an inquest held at Mossley”* (Manchester), says the “Graphic,”† “our old friend, the dog, is not the only creature of whom persons, nervous in the matter of hydrophobia, must beware. An unfortunate Unitarian minister of that place having been bitten by a *cat*, was some time subsequently taken with fatal symptoms, which two local surgeons were of opinion could only be hydrophobia. Unfortunately, as is commonly the case, the cat has been destroyed, without any attempt to investigate the conditions of its intellect; so that the opinion of the surgeons and the credit of the Mossley jury are not likely to be disturbed. Still there are grounds for doubt. Hydrophobia resulting from cat-bite has been mentioned, it is true, in the *old* books; but so has hydrophobia from the pecking of a *fowl*, and even from the bite of a *man*. Medical science, however, is now sceptical about *old* cases‡ of hydrophobia; and it is curious that chief among the reputed symptoms of the Unitarian minister is that special aversion to cold water which, though it gives the name to the disease, is now classed among vulgar errors. While a surgeon of the eminence of Dr. Watson declares that he has never met with more than four cases, one at least of these being doubtful, it is no disparagement to the Mossley surgeons to assume that their practical acquaintance with this *rare* disease is limited: and it is comforting to reflect that even surgeons may be mistaken in this matter, as was proved by a recent case in which, notwithstanding a verdict of hydrophobia, based on the evidence of two highly respectable practitioners, the deceased was subsequently proved to have died of *arsenical poisoning*.”

The same journal, the “Graphic,”§ had previously thus written:—“A young surgeon, anxious to distinguish himself as a scientific enquirer, could not, perhaps, take up any subject more promising than that of hydrophobia. We have

* This case was described by Dr. Brumwell, of Mossley, in the “British Medical Journal,” Oct. 14, 1871, p. 434.

† Of Aug. 26, 1871.

‡ “Old cases” are not, however, so valueless as is here represented. For we have already seen how the hydrophobia panic of 1876-7 resembles that of 1760; while a typical case of what may be called “imaginative” hydrophobia, that occurred in 1732, is recorded in the “British Medical Journal,” of June 30, 1877, p. 817.

§ Of June 3, 1871.

seen in the papers this week two cases which are at least remarkable. In the one, a child, reported to have died of this horrible disease, is admitted to have been never bitten by a dog at all: but as the doctor had no doubt on the subject, it is inferred it must have taken the poison into the system through a scratch on the foot. In the other case, the bite of a *cat*, not known to be suffering from rabies, is given as a cause of the disease. It is really time that medical men inquired into the terrible subject on something like a scientific method. Will any competent authority, for instance, subject the saliva of a mad dog to chemical analysis, and tell us what is the nature of a poisonous element which is capable of circulating through the blood and affecting human beings with such distressing symptoms? The action of all other poisons is perfectly well known, and there seems no reason why some exact knowledge could not be obtained on this important subject.”*

The following curious case happened in the practice of Dr. Lindley, of Derby.†—The patient, a man, said he had been bitten in the leg by a mad dog 12 years ago, and that he had been subject to attacks of hydrophobia in the “Dog-days” ever since. There was a large scar on the back of one leg, where he said he was bitten. His periodical—*annually recurring*—attacks had the following character:—His violence was such that he required to be held down in bed by four powerful men. He barked like a dog, foaming at the mouth. He snapped at and attempted to bite bystanders, and in one of his attacks he had bitten a piece of flesh out of his brother’s arm. The whole body became rigid; the power of deglutition was almost suspended, the greater part of the water he tried to swallow coming away almost immediately. There were spasms of the throat and whole body, with grinding of the teeth—the masseters being as hard as stones. These violent or serious symptoms gradually gave way simply to hurried respiration; or he fell fast asleep under a single dose of chloral, awaking apparently in his normal health, the disorder having quite passed away.

At Oldham (Lancashire), in the winter of 1872, a boy died whose death was certified by his medical attendant as due to scarlatina, dropsy and convulsions. A rumour sprang up, however, that hydrophobia was the real cause, and this led to

* Something like “exact knowledge” of such a kind may at length reasonably be expected from the British Medical Association Hydrophobia Commission, recently appointed. (*Vide* “Brit. Med. Journal, Nov. 10, 1877, p. 672).

† As reported in the “Glasgow Daily Herald,” of June 17, 1871.

a coroner's inquest. It then came out that in the month of August previously he had been bitten by a dog. Among the symptoms of the alleged "scarlatina, dropsy and convulsions," it appeared that "on one or two occasions he barked like a young dog, and he attempted twice to bite his father, and, failing him, snatched at his own arm. It did not appear that he had a dread of water. But he occasionally shook his head when liquids were offered him. He had been heard to say that he should die through the bite of a dog." Of the jury, "six agreed that the boy had died from hydrophobia; three declared that death was the result of natural causes; and the rest expressed no opinion." Eventually the jury unanimously found "that deceased was bitten by a dog.....which was supposed to be mad: but whether deceased died from the bite, no conclusive evidence appears to the jurors."*

In a Liverpool hospital, in 1875, there died a labourer, who "had for a year past been continually referring to the death of a man from hydrophobia, and was in low spirits ever since" the said man's death. At length he himself got into a "highly nervous and delirious state," characterised by "barking like a dog," and accompanied by some kind of "fit." *Post-mortem* examination showed that he died "from disease of the brain and spinal cord, the result of natural causes."†

At Tottington, near Bury (Lancashire), a man, as he jumped out of bed one morning, "complained of having been bitten by a dog, and said that he was going mad." He "knocked at the houses of several of his friends, and told them that he was going mad." By and by he did go mad, after his own preconceived fashion; then he barked and howled "like a dog; and as he became unmanageable, it was found necessary to fasten him with cords into his bed." Lastly he died, shortly after admittance into the Jericho Workhouse, Bury. A few days previously to the development of the belief that he was "going mad," one of his fingers had been scratched by a dog's tooth. "But"—we are expressly told—"the dog was not rabid." The "real cause" was attributed to his having killed, about three weeks before this, a mad dog that had bitten several children. "He had a small scratch upon one of his fingers at that time, and it is believed that it came into contact with the saliva from the dog's mouth."§

* As reported in the "Northern Ensign," of November 21, 1872.

† "North British Daily Mail," Jan. 15, 1875.

§ "Manchester News," quoted in the "North British Daily Mail," July 28, 1873.

Here, as so frequently happens, there is nothing like proof that the self-constituted patient was inoculated with rabietic saliva—or even with canine saliva—at all.

“At the Aston (Birmingham) Police Court, the wife of a labourer.....applied for a summons against the owner of a dog, to show cause why the animal should not be destroyed.” She “stated that a short time since, the dog bit her husband in a public house, and that he was still very ill, although the wound had been cauterised.” The patient “seemed to fear he would have hydrophobia unless the dog were killed.....He appeared to have an impression that he could not recover unless the dog were destroyed.”*

This is but one of the latest specimens I have met with of a mischievous *superstition* that seems to be as prevalent among our lower orders now-a-days as it was centuries ago; mischievous especially in that the premature destruction of an accused animal deprives us of the means of determining whether or not it was really rabietic.

“At Manchester, a man who had been bitten by a dog, became much depressed, and went into the infirmary, where it was ascertained that, though entirely free from any symptoms of hydrophobia, he was suffering from *acute mania*, the mere result of *delusion and fear*. He died.....and in accordance with the medical testimony, a verdict was returned by the coroner’s jury that death was caused by exhaustion, consequent on *delirium*, and that the deceased had not suffered from hydrophobia.”†

At Sheffield, in 1874, a mason died from the effects of *cat-bite*. He at once “fell into a desponding state, and sold his tools, remarking that he would never use them again.” Then gradually he became “quite mad, showing all the symptoms of hydrophobia, and the still more painful and extraordinary manifestations of *cat madness*. The poor man would jump up like a dog, and emit a series of short sharp barks; he would then elevate his back and crouch like a cat, hissing and spitting all the while.....The cat has, of course, been destroyed.” That animal had been bitten by a mad dog, and the then presumably mad cat had bitten a child and several grown-up persons—but without, to them, any ill result.‡

This case affords a good illustration, so far, of the development of what may be termed *bestial traits* in the spurious

* “North British Daily Mail,” November 9, 1877.

† “Daily Telegraph,” Feb. 19, 1874.

‡ “Glasgow Weekly Herald,” Jan. 31, 1874.

hydrophobia of man; the imitation, that is, of *canine* habits in cases resulting, or supposed to result, from dog-bite; and of *feline* ones in those from cat-bite.* For several reasons I hold the development of such symptoms to be proof of the paramount influence of a *morbid imagination*. In association with ignorance, such an imagination begets curious *errors in man's simulation* of what he conceives to be typical canine or feline hydrophobia. Hence, in the present instance, the curious blending of canine and feline symptoms, when only the latter should have been exhibited. The subject is, however, so interesting, that I must dwell at greater length upon it in a subsequent paper.

A drover, aged 30, called at the Infirmary of Leeds, in June, 1876, and "requested to be admitted to the Institution, as he was suffering from hydrophobia. When he first presented himself at the institution, it is stated that he appeared quite sane and self-possessed." He had, however, been previously treated in the same infirmary for hydrophobia. "Some time after his (second) admission, he began to exhibit the usual symptoms of madness, and died apparently in great agony." He had been bit in the hand by a retriever in March; the wound was then cauterised, and he seems to have been well in health till the middle of June, when he presented himself for the second and last time. †

A merchant in Liverpool died of so-called hydrophobia. He had been bitten nine months before; the wound had been cauterised and had healed. "But he never could prevent himself brooding over his injury." He took seriously ill suddenly and "died raving mad." ‡

In this, as in so many other cases, instead of genuine hydrophobia, what we have to deal with apparently is *morbid fear* begetting *delusions* of fear, and then *acute mania*, with sometimes a hydrophobic facies; that is to say, we have as epiphenomena, or, as accessories, a series of symptoms that are popularly supposed to belong to hydrophobia, but which in truth are no necessary part of it.

A man at Leeds, who had been scratched by a *kitten*, "mewed like a cat, and showed a great aversion to water until he died." The same kitten had scratched "several other members of the family," and it does not appear that any of

* "The Animal World" (Vol. iv., 1873, p. 381), cites a case of hydrophobia from *cat-bite* in a man, who imitated the actions of a *cat*—not of a dog.

† "Glasgow Weekly Herald," June 17, 1876.

‡ "North British Daily Mail," November 21, 1876.

them were affected.* This is merely an illustration of what is constantly occurring—that the same bite, or kind of bite, which is generally innocuous, proves fatal to some individuals, who must possess a special receptivity or impressionability, predisposition or idiosyncrasy, whatever be its nature. In a subsequent paper I will try to show that this peculiar liability to hydrophobia, from dog or cat bite, resides in naturally or morbidly timid, superstitious, illiterate persons in whom *delusional fear* is readily engendered.

The “Pall Mall Gazette” † gives a case of fatal hydrophobia—that of a young male farm servant, a lad of 17, in Kent. “The dog which bit him was then, and is—so far as we know to the contrary—perfectly well. Now this is a crucial case, and one which, we think, ought not to be lost sight of.” The “British Medical Journal” ‡ mentions what is probably the same case in a lad bitten by a sheep dog, which “has, up to the present time, shown no signs of rabies.”

A series of five cases in the Nottingham Hospital was recorded by Dr. Elder § in 1871, and in none is the dog that bit stated to have been rabietic. In one instance the patient had been playing with his own dog when bit, which he would never have done had there then existed in his mind even a suspicion of rabies in the animal. It was discovered, apparently *after* the development of hydrophobia in its master, that for some days previous to the incident the dog “had been shy and evidently out of sorts.” But *ex post facto* discoveries of such a kind are obviously of little or no value. Again, two cases were described in the same year by Dr. Ellis, || of Crouch Hall, Doncaster; and in neither was the dog reported to have been rabietic. ¶ At a meeting of the West Somerset Branch of the British Medical Association at Taunton, in April last, Dr. Norris read a paper on “A case of hydrophobia or its *Eikon*.” “The case,” we are told, “presented features involving doubts whether the patient, a man aged 42, who died after seven days’ acute illness, had really been bitten; and if so, whether his dog, which he

* “North British Advertiser,” August 26, 1876.

† Of November 5, 1877, p. 10.

‡ Of November, 17, 1877, p. 720.

§ “British Medical Journal,” December 2, 1871.

|| *Ibid.* May 6, 1871, p. 474.

¶ There is an excellent common-sense article on the question—“Is there evidence sufficient to warrant us in connecting the group of symptoms which we term hydrophobia with the bite of a rabid animal?” by Dr. Burder, of Bristol, in the “British Medical Journal,” October 26, 1872, p. 462.

had caused to be destroyed six weeks previously, really was affected with rabies." *

Dr. Rigden, of Canterbury, published in 1876 a fatal case of hydrophobia in a man who had been bitten by a dog "supposed to be suffering from *distemper*." "The man himself had suffered from nervous depression." "The great repugnance to the sight of fluids" which existed in this case, as in so many others of spurious hydrophobia, curiously enough "did not extend to the sight of his own urine."† "Hydrophobia Nine Months after the Bite of a Dog" is the title of a paper by Dr. Newman, of Alrewas, Staffordshire, in 1872. It is not alleged that the said dog was mad, nor was there any evidence to this effect. The wound was freely cauterised within half-an-hour of the bite; it healed well; and there was no feeling of inconvenience for nine months. Another patient, however, bitten by the same dog, died in two months.‡ In another case, fatal four months after the bite, it is not asserted that the biting dog was mad.§ On the other hand, Dr. Fothergill, of Darlington, recorded a case in 1871, from the bite of a dog, "which *afterwards* proved to be mad;"|| a statement not quite reconcilable with the opinion of those who believe that there is no danger to man from dog bite during the stage of *incubation* (of rabies) in the animal.

An instance, in a woman, of spurious hydrophobia lasting over two years, was given by Dr. Bostock, of Horsham, Sussex, in 1876.¶

Foreign cases of spurious hydrophobia do not differ in their essential characters from British ones. A curious instance of *annual* or periodic so-called "hydrophobia" occurred in Augusta (Maine, U.S.) in 1876. The patient—a gentleman—was bitten twelve years before, "and since that time annually, and *only once a year*, he is afflicted by these manifestations that greatly *resemble hydrophobia*." He feels the fit coming on, "and takes the precaution to lie down; or otherwise he has a desire to pursue and bite whoever may come in his way." He had something of the character of a fit, partly apparently of an epileptoid character; for "most severe convulsions" are described, while there were also frothing at the mouth, and rolling on the ground. He made

* "British Medical Journal," June 2, 1877, p. 697.

† *Ibid.* December 23, 1876, p. 827.

‡ *Idid.* May 4, 1872, p. 471.

§ *Ibid.* August 12, 1871, p. 183.

|| *Ibid.*, p. 264.

¶ *Ibid.*, October 14, 1876, p. 509.

a noise somewhat similar to the barking of a dog, "and he would also try to bite."* In a less recent American case, "the man was in convulsions, barking like a dog, frothing at the mouth, and making strenuous efforts to bite everything that came near..... He would seize the pillows from his bed in his teeth, and shake and rend them with all the seeming ferocity of an angry dog. An intense dread of water also exhibited itself."†

Dr. Hall, an American writer, referring to a man who had "angered" a dog by drawing it forth from under a sofa and whipping it, states that "while doing so, the dog managed to snap a piece of the flesh out of the man's arm, and he died in a few days, in East Newark, New Jersey, in all the horrors of hydrophobia."‡

Such a case opens up the most important questions — such as (1), whether the bite of a *healthy* animal can produce fatal injury or disease in man; and (2), whether such injury or disease in man is the same or different when the biting animal is in a condition of marked mental excitement or depression. The whole subject of the results in man of *animal bites* is one of such moment that I propose returning to it in connection with the influence of *imagination* in the production of the result, whatever it be.

Dodge, in his "Great West" of North America, (p. 94), says that in a certain territory, the bite of the *Skunk* is "almost invariably followed by that most horrible of all horrors—hydrophobia;" that is the bite of the *healthy* or non-rabietic animal, for he takes care to explain,—“It does not follow that the skunk is himself afflicted with the malady;" in fact no case is given of its having been so affected, or even suspected of having been so." And he adds (p. 95),—"Though I have seen many dogs bitten by skunks, I have never known a dog or other lower animal to go mad from such a bite." Here we have apparently the popular belief that the bite of the skunk, a much detested animal, is as dangerous as that of the "mad" dog, leading to the development in man of hydrophobia, that must be considered "spurious" in its character.

In an obituary notice of Dr. Simpson, of Clarendon,

* The "Augusta Journal," an American newspaper—quoted by the "North British Daily Mail," of August 23rd, 1876.

† "Detroit Tribune," quoted in the "North British Daily Mail," of October 22, 1872.

‡ In his "How to Live Long," 1875, p. 33.

Jamaica, whose death was ascribed to hydrophobia, it is nevertheless stated that (1) the dog that had bit him some months before was then still alive, and had never shown any symptoms of rabies; and (2) that the deceased had scratched his thumb while making a *post mortem* examination.*

An instance of death of a boy from *fright* after a *rat-bite* in India, was narrated by Dr. Matthew, an Indian army surgeon, in 1875. The native police regarded the fatal issue as attributable to rat-bite; but medical opinion held that "death could not have been caused by the bite of the rat, or anything else in so short a time. I conclude that the boy died of fright."†

A man in the hospital of St. Giacomo, at Rome, who had been bitten by a dog, "supposed to be mad,..... had such *fear* of hydrophobia, that he jumped from the top window.....and was crushed in the most horrible manner."‡

This is a good illustration both of *suicide* from morbid fear—the special fear being that of a certain death from the most terrible of all human maladies—and of morbid *mental* symptoms being sometimes the only ones developed in cases of dog bite. Of two American (New York) cases of alleged hydrophobia, "one man.....became a *maniac* owing to his *fear* of the disease;" while another "sensitive person sank under nervous excitement resulting from fear of it."§ The attack is attended with, or ushered in by "circumstances so horrible as in many cases to upset the *mind* long before the time when the body is in danger."|| A lad of 17, in London, a sufferer from hydrophobia, was affected with *melancholia* of a suicidal kind; "he had once attempted to commit suicide,"¶ we are told. A case of suicide of a girl from fear of hydrophobia from dog bite was recorded in the Bradford newspapers in June, 1877.

The foregoing cases have been quoted from newspapers or journals of *recent* date, that is of date since 1870. But any one who will take the trouble to consult medical or veterinary journals of earlier dates will have no difficulty in discovering hosts of similar incidents; and he may add to his collection

* "Journal of Mental Science," April 1873, p. 167.

† "British and Foreign Medico-Chirurgical Review," January 1876, p. 240.

‡ "Edinburgh Courant," April 28, 1874.

§ "London Medical Record," as quoted in the "North British Daily Mail," July 25, 1874; and "Edinburgh Courant," July 18, 1874.

|| The "Field" (newspaper) of October 19, 1872.

¶ "British Medical Journal," March 17, 1877, p. 325.

of cases if he further consult various books on medical and veterinary subjects.

One of the most eminent of English veterinarians, Wm. Youatt, long ago "kept a record of 400 persons who had recourse to his assistance after having been bitten by *really rabid* animals; and although one died of *fright*, not one had hydrophobia, whichif confirmed leaves little ground for apprehension to any one who had applied for surgical assistance."*

Another eminent English veterinary surgeon, one of our own day,† thus writes:—"It is wonderful how injuriously the *mind* may be acted on in such circumstances, and actual disease, although not the fatal one, propagated in people of certain nervous and susceptible temperaments, when there is really no apparent—and, I would add, possible—danger to be apprehended."‡ Hence he very wisely recommends the *cheering* or amusing treatment of those *malades imaginaires*, who are "inclined to take a gloomy view" of their case,—who believe themselves doomed to death by hydrophobia—sometimes even without having been actually bitten by a dog at all. In other words, it ought to be the business no less of the physician than of all such a patient's friends and consolers, clerical or lay, to *divert* his thoughts by all means from the depressing subject, and where sufficient intelligence exists, to point out the absence of any real danger and the absurdity of groundless alarm. This is just what ought to be done, but is not,—in all other forms of delusional melancholia—in their early and curative stages.

And Mr. Cowie's opinion as to the wonderful influence or operation on or of the *mind* in connection with spurious hydrophobia is echoed by the Press in all parts of the country. "Most of the deaths recently declared by frightened jurymen to be caused by hydrophobia, were, it seems to us, really caused by *superstitious terror*. Died of fright would have been a more appropriate verdict. . . . We cannot rationally account for a number of dog-bites, some weeks old, some

* Notice in "British and Foreign Medico-Chirurgical Review," (for October, 1874, p. 350), of the chapter on *Hydrophobia*, contained in "Contributions to Pathology and Surgery," by Cæsar H. Hawkins, F.R.S. (1874). The same remarkable circumstance is alluded to in an article on "Mad Dogs," by Wm. Chambers, LL.D., in "Chambers' Journal" for June, 1874, p. 403.

† James Cowie, M.R.C.V.S., of Sundridge Hall, Bromley, Kent, now retired from practice, who writes the article, *Rabies*, in "Chambers' Encyclopædia," and has also published a pamphlet on "Rabies, or Madness in the Dog," a lecture delivered at the Royal Veterinary College, London, on 29th February, 1876.

‡ In his pamphlet above mentioned, p. 18.

months old, some years old, terminating in death as soon as one or two cases of hydrophobia are reported in the papers, except on the theory that *fright* has a good deal to do with it.”* “Nothing in the category of disease more afflicts the *mind* than the possibility of falling a victim to this hitherto fatal ailment, and the nameless horrors which are supposed to attend it.”† “There is reason to believe that the hydrophobia exhibited by certain nervous women is frequently occasioned by nothing else than the struggle which goes on between *fear* and the will to swallow.”‡

Dr. Druitt points out that hydrophobia may be simulated by *hysteria*, *delirium tremens* and *phrenitis*, in some of their many forms. Such simulated cases—of what he calls “spontaneous” hydrophobia—usually occur in hysterical women, or in male drunkards. “As we know that *hysteria*§ may simulate any disease that can be named, nothing can be more likely than that if a hysterical or nervous person have been bitten by any dog or cat, healthy or otherwise, the fears of the consequences and knowledge of the symptoms of hydrophobia will suffice to bring on a simulated attack. Or, again, if a person be affected with any form of *delirium* after an accidental bite, what can be more likely than that hydrophobia will be the leading subject of his ravings?”|| And the same able and experienced London surgeon remarks on the extreme difficulty of diagnosis sometimes between such spurious and genuine hydrophobia.¶

There is a very instructive parallelism between the effects of dog-bite in Britain and of *arrow poison* in the South Sea Islands, to which attention was not long since directed by Dr. Messer, R.N., who accompanied Commander Goodenough when the latter was fatally wounded by the poisoned arrows shot by the natives of one of these Islands, that of Santa

* “Pall Mall Gazette,” November 5, 1877, p. 10.

† “Times,” commenting on the curative Experiments of Dr. Offenburg, of Munster, Westphalia, as quoted by the “Dundee Courier,” of November 15, 1877.

‡ “The Will as a Therapeutic Means,” by Professor Joly, a paper read before the Académie des Sciences of Paris, in 1875, and quoted in the “British Medical Journal,” for November, 20, 1875, p. 650.

§ What he called “mental hydrophobia,” an imaginary malady of a *hysterical* nature, was described by Trousseau, according to Fleming [“Rabies,” pp. 262-3]; who himself cites various cases of pseudo or imaginary hydrophobia in man, (p. 263), and points out the resemblance of hydrophobia to *mania*, (p. 264).

|| “The Surgeon’s Vade Mecum,” 5th ed., 1851, p. 160. Compare what he says of “Hysterical Tetanus,” p. 21.

¶ *Ibid.*, p. 161. Illustrations are quoted from the “London Medical Gazette,” (of November 4, 1837), and the “Lancet” (vol. for 1838-9, p. 582).

Cruz, in the summer (August) of 1875. Dr. Messer has shown that the *tetanus* which so generally follows wounds, however slight, by such poisoned arrows, or arrow-poison, or which arises from supposed wounds or poison—is, like hydrophobia, frequently at least, the result of *fear and mental derangement*, not of a specific tetanus-producing poison.* He evidently thinks that “Fear and mental emotion are strongly predisposing causes of tetanus, if not actual producers of it, when they are associated with a wound under certain conditions of climate and hygiene;” and he concludes or argues that “the removal of such a *bugbear* as the dread of the poison would take away one of the chief features in inducing tetanus to follow these wounds.”† “It appeared pretty plainly,” says the “Pall Mall Gazette,”‡ “that those so wounded who thought they would die, did die; . . . and we suspect much the same sort of thing is going on now” as regards hydrophobia in London. The parallelism between dog-bites and arrow-wounds is further borne out by the fact that many “medical men of eminent scientific attainments do not believe in what is called hydrophobia and only recognise it as *tetanus* . . . caused by wounds such as crushed thumb, a puncture, or a scratch with a rusty prong or nail.” § A case of alleged hydrophobia was quite recently given by Dr. Power, of Dartmoor, in which the symptoms resulting from dog-bite were those simply of that form or degree of tetanus, known as trismus or locked jaw.||

Hitherto, I have been illustrating imagination in connection with *fear* in the production of a spurious hydrophobia. But there is a *per contra*, which is quite as curious and as deserving of notice, viz., imagination in connection with *faith*, in the so-called “cure” of hydrophobia, real or spurious. It is apparently to faith, for instance, that we must ascribe the quack cures of hydrophobia by all manner of vaunted specifics. The cure—where there has been recovery from hydrophobia at all—has been of a *mental* kind, by means, to wit, of faith in the efficacy of a certain remedy, or the ability of a certain quack, or of both. And this sort of faith, however it may be rooted in, or based upon the grossest superstition and ignorance, is not a thing to be

* “North British Daily Mail,” January 2nd, 1877.

† “Daily Review,” January 3, 1877.

‡ Of November 5, 1877, p. 10.

§ “Pall Mall Gazette,” November 5, 1877, p. 10.

|| “British Medical Journal,” November 17, 1877, p. 693. Compare what Druitt says of the “Causes” of ordinary tetanus (p. 16), and of its “Diagnosis” from hydrophobia (p. 15).

despised either in itself, or its results. On the contrary, faith or confidence is the one thing above all others that must be inspired in panics of all kinds. At present, however, I must not enlarge upon such a subject. All that I can here do, is to point out shortly the character of the so-called "cures" of hydrophobia by this or that popular specific.

Records of eight cases of such *cures* have been given us by Dr. Prince. In one of them (case VII.), the patient, a short time after being bitten by a "mad dog," "became very unwell and *melancholy*. . . . He was persuaded to take the medicine" [Dampier's powder, or its modern equivalent], "and he *immediately* recovered his usual health and spirits." In another (case IX), "a dog was found to be unwell," and while so it bit a man. "As the dog some time *afterwards* became the subject of rabies, the person procured some" of the Sussex specific, "which had a very remarkable effect; the healed wound smarting, re-opening, and discharging pus for two or three hours, and then healing again. This person never felt ill effects from the bite, and is now alive."*

And such records are by a physician of good repute in Sussex.†

Obviously, in such cases, before we can entertain the idea of "cure" at all, we must have some proper evidence—

1.—That the dogs that bit were rabietic.

2.—That the men affected were the subjects of genuine hydrophobia; and

3.—That, being so, they would not have recovered but for the use of the quack nostrum resorted to.

A woman in Richmond (Virginia), cured 300 cases of hydrophobia by means of a *madstone* applied to the bitten spot—the charge being 150 dollars for each application. "The stone has to remain twelve hours each time.....Its application has been entirely successful in every case—no person ever experiencing any trouble afterwards from the bite." In one case we are told that the madstone "on the *first application* afforded her great relief, and she is now in good spirits and feeling no pain or inconvenience whatever from the bite."‡

"Dr. Offenburg has recently drawn attention to a case

* "Field," October 19th, 1872, p. 369.

† Probably now of Tunbridge Wells, Kent; the author of a paper, on "The use of *Lichen cinereo-terrestris* as a Preventive to Hydrophobia." ["British Medical Journal," 1872.]

‡ "North British Daily Mail," January 15, 1874, quoting from American newspapers.

of so-called hydrophobia successfully treated with curare. We have before us Dr. Offenburg's thesis, containing all the details of the case. It is, however, impossible to read it with care without seeing that it is extremely doubtful whether the case was one of hydrophobia. Judged by the description which the author himself gives, it might be pronounced a case of *hysteria*, of which it has all the characteristic symptoms."*

"We all know how, in Goldsmith's imitative ballad—

‘The dog, to gain some private end,
Went mad and bit the man.’

"And we also know that to the surprise of all Islington—

‘The *man* recovered of the bite,
The dog it was *that* died.’

"‘There is a moral in the Doctor's nonsense.’† But a consideration of his moral, as well as of that to be drawn from the remarkable series of incidents narrated in the foregoing pages must be deferred; perhaps to be dwelt upon, with the fulness to which its importance entitles it, in some future contribution to the “Journal of Mental Science.”

The Physiology of some Phases of the Poetic Mind. By
FREDERICK TREVES, M.R.C.S.

As the knowledge and appreciation of light are rendered more distinctive by the near presence of a shade, and as the idea of absolute smoothness is presented to the mind with a keener readiness when viewed in relation to an inequality of surface; so in mental science such phenomena as are normal, and therefore in a sense unvaried, are better known when studied in connection with others that are abnormal, and in consequence more clearly to be individualised.

The pursuit of psychology has a difficulty that no other science can possess; and it is this—that the object examined and the subject examining are similar, or differ only in the slighter details. Mind is brought to examine mind, as a lens would be to examine a lens; so that simply to observe and to record facts, the very first and most elementary principle in all science, is in this branch of knowledge fraught with difficulty and obscured by doubt. The obser-

* “British Medical Journal,” November 17, 1877, p. 708.

† Article on “Dogs” in the “Graphic,” September 9, 1871.

vation cannot but be tinted by the characteristics of him who observes; its bare appreciation even will depend upon varied and unstable elements, for it is to one and the same instrument that each psychological fact is brought, not merely for record, but also for analysis and judgment; just as if the value of all mechanical force were to be judged only by the physical power of each individual observer. In the physical sciences there are known standards, common to all investigators, for estimating the value of phenomena, so that independent students can obtain similar results. Heat, colour, tone, and sound can be valued by a recognised measure; but mental science has no such exact and unvarying standard; views must differ as to what are the attributes of a normal mind, and therefore the value of any given mind motion must depend to a great extent upon the judgment of each individual student of the science.

It thus happens that the most satisfactory results in psychology have been obtained by the study of abnormalities of mind, of the different forms of brain lesion, and of the various species of insanity; because in these instances the peculiarity is so marked and distinctive that the majority of other minds might be regarded as practically normal when viewed in relation to them.

Now such minds as are imaginative or poetic in a marked degree must be regarded as abnormal, inasmuch as they are not common and present phases that are in each case more or less unvarying. Regarding, therefore, a poet's brain as abnormal, its study has been considered to be justifiable and one that can be conducted on more or less sound principles and with more or less reliable results. The importance of regarding the poetic mind as other than normal is urged as a preliminary point, in order that the bias of sentiment and preconceived views might be put aside, and that by the use of such common means of enquiry as are applied to other, and perhaps more prominent, mental abnormalities, more common grounds of argument might be arrived at.

In the first place it is most needful to obtain distinct views as to what are the essentials of poetry, and to clearly understand what are at least the most prominent attributes of the poetic mind. The art of poetry, like that of music and painting, is complex, and involves many considerations. In music, for example, we must regard the mind faculty as alone essential, and eliminate from its study, as mere

accessories, its simple physical modes of expression, the fingering of the keys, the handling of the bow, the management of the strings. So in the painter's art it is easy to conceive that an ordinary individual, endued with dexterity of hand, could acquire by patience and practice as great a skill and readiness in the use of the brush and palette as a Turner or a Reynolds, and yet be as lacking in the very living impulses of his work as a mirror without light, or a complex battery with empty cells. When all mere accessories are cut out from the pure idea of the poetic function its peculiar or distinctive properties will be found to be but simple. A process of analysis that would exclude all the non-essentials of the faculty would demand an omission of the following factors of poetry, so called. In the first place, the mere verse making, the simple rhymester's work, the pure handicraftman's portion ; this and all the varied tricks with words bear only such relation to poetry as do the marble and the chisel to the visions of the sculptor, or the keyboard to the melodies in a Mozart's brain. They are simply methods of expression, shared alike by the epic writer and the veriest mumblor of rhymes ; and, as mere means, have no value apart from that derived from the brains and hands that use them. Moreover, to reach at the more essential principles, it is needful to exclude all that is merely descriptive, all simple analyses of action and emotion, all such elements as are purely argumentative or involving simple metaphysical discussion. In much that is given to the world as poetry there may be descriptive passages, which, when dissected from the jingle of verse and the formal trifling with words, will appear as sober prose. A page from a treatise on philosophy may, by a simple change in its garb of letters, pass muster as poetry, and yet be lacking in the one thing needful to render its claim to that title a logical and a just one ; albeit it must be owned that such passages, although holding no individual right, might yet obtain a doubt as to their nature, by assisting in the expression of a poetic fancy, and by being considered as simple parts of a poetic whole.

By a process of exclusion, therefore, that which constitutes the spirit or principal characteristic of the poetic faculty, would appear to consist of this purely—the power of fancy or imagination. As the pointed arch forms the principal feature of the Gothic window, so this power may be regarded as constituting the great essential of the art of poetry ; and

to it, in the present instance, attention will be exclusively directed, not as to the sole, but as to the pre-eminent characteristic, for in any matter of so subtle and involved a nature as that now under consideration none other than the most evident features can—in a preliminary enquiry at least—be regarded.

The terms “fancy” and “imagery” are somewhat widely and perhaps vaguely applied; but in the present instance they will be regarded as being practically synonymous, inasmuch as they differ from one another only in degree, and may be considered as shades or phases merely of the same species of mental action. Without entering into detail as to the relative properties expressed by these two terms, it may be remarked that to both, but to imagination in particular, it is common to ascribe some creative faculty. But to mentally create or evolve mind material *de novo* is not a property of the human intellect. Existing ideas and conceptions may be arranged, rearranged and elaborated, and novel forms produced as varied as the figures in the kaleidoscope. These forms may be said to be in a certain sense created, inasmuch as they may never before have been produced under their present aspect; but their elements, their factors, are no creations; they are the separate pieces of coloured glass, the pre-existing ideas that the active mind can group in myriad forms limitless in number and variety. Caliban is no creation, no being evoked from a mental void; but like a piece of cunning patch-work, he presents a master's grouping of elements, of characteristics gleaned here from the man and there from the beast, and that, like the separate fragments in the kaleidoscope, have fallen together into a figure striking and defined. This fact is here brought under notice in order that any tinge of the supernatural may be excluded from the present question, and that it may be evident that we are dealing with no other than ordinary mental elements.

Imagination, as applied to poetry, may be regarded as a power that can add to any ordinary idea a distinct and new intelligence, and engraft upon it unusual or original elements; such addition or grafting being in every case in accord with accepted æsthetic principles. The terms “ordinary,” “new,” “unusual,” and “original” must be regarded and are used in a relative sense only, inasmuch as whatever involves any consideration of novelty must depend upon such uncertain and ever-changing bases as are afforded by

individual minds and peculiar circumstance. In all efforts of fancy or imagination, these two factors will be found to be present, a re-construction of idea by the grafting thereon of novel elements, and a compliance with what are termed the laws of beauty. And in relation to this subject a singular passage by Francis Bacon may be quoted, wherein he says, "There is no excellent beauty that hath not some *strangeness* in the proportion."

The above definition can perhaps be rendered more evident by instances. Our ideas of external objects, for example, and of the associations that they give rise to in each individual, depend upon and have origin in, certain factors that must be regarded as accidental to a certain extent; these are hereditary disposition, education, habit, development of the mental and moral powers, the peculiarities incident to climate, custom and country, and, indeed, all those elements that constitute an individual as an individual. A butter-cup cluster in the fields in spring may give rise to some vague composite feelings of pleasure in the mind, a pleasure that would spring from some appreciation of the simplicity of the flower, its daintiness of colour and tenderness of shape, or from some personal incident or recollection. Such ideas are ordinary, and depend for their distinctiveness upon purely individual peculiarities. So that to another mind the same spring flower may be passed with complete indifference, or even regarded with contempt. Now if imaginative power be brought into play, it would add to this simple idea of the butter-cup another that would be both relatively novel, and in conformity with one's principles of beauty; so that he who first spoke of this flower as "a pale gold cup" would add to it a fancy, and be at the same time considered to have exercised the faculty of a poet.

So is it with every other subject touched by poetry, from the simplest epithet to the daisy to the grandest flights of thought; for in either case if the distinctive features be sought it will be found to be the development or addition of novelty in idea blended with a consideration for effect; the term "novelty"—it may be necessary to repeat—being used in a relative sense only, and with as little regard to its purely conventional meaning as possible. The ideas of love, of passion, of the various phases of human emotion that are framed by a normal mind, are such as depend upon experience, upon mental and moral training, and upon idiosyncracies of thought; and if the reader, with but his

own simple ideas on such topics before him, peruse an ode to love or a sonnet to some other of the passions, and then carefully endeavour to search out what has been the distinguishing feature in the poet's work, he will attain the conclusion that it consists simply in the fact that new elements have been cast among ideas that may be regarded as normal or ordinary, and that this or that passion, and this or that phase of humanity have been presented to him in a light that is at once novel and æsthetic.

Both elements are needful ; it is not sufficient, on the one hand, that familiar ideas be expressed in more æsthetic terms, nor that a newness of thought be the only characteristic, on the other ; but it is the co-existence of these two elements, it is urged, that actually constitutes a distinct intellectual feature. Both the value of the foreign element in the idea, and the standard of beauty set up in the mind, must, of necessity, vary with the culture of the reader and his own peculiar forms of thought ; so that it will happen—as Macaulay well remarks—that poetry becomes less easy and less exuberant as the march of learning and civilisation advances.

Among the ancients poetry flourished in a form at once the most simple and the most easily to be understood.

The ancient Greek saw in the floating cloud a moving wing, in the summer wind a goddess's whisper, and in the noise and babble of the waves the voice of the old man of the sea ; to his simple idea of the things in the world around him he added a new sense fresh and beautiful, and so created a poetry of vivid and intense loveliness, a religion of winds and waves, a morality of sunlight and spring glories.

The same principle holds good for all other forms and varieties of poetry. In a passage of verse purely metaphysical, such, for example, as one might find in Bailey's "Festus," if the reader will put aside as mere accessories those elements of the composition above enumerated, he will find that the property that, more than any other, renders the passage distinctive, its very essence as it were, will consist of this—either old matters of thought and workings of mind are brought forward in a novel garb, and illumined by a light hitherto unknown, or new ideas and new impulses of action are introduced into some fresh world of thought, and the pioneers of originality into some as yet untrodden plains of enquiry. And in either case the rule of beauty will be observed. So, too, in poetry purely mystical ; in such a kind, for example, as "The Rime of the Ancient Mariner," a similar

ruling characteristic will be observed. Here to such scanty ideas as would arise in the mind of an ordinary individual from the contemplation of a ship, a sea, a sea voyage and a mariner, are added ideas of a brilliant and wondrous novelty. A glare as from an unknown world is shed upon it all, and a sea spreads out before the eye such as never broke upon a beach, and a barque glides on such as no mariner has ever seen and no breeze has ever blown upon; yet withal a ship and a sea; and an analysis of the chief power and essence of the poem shows unusual construction of idea blended with what in beauty is terrible and mysterious.

It must be held in mind that the standard of beauty observed in all forms of poetry must of necessity vary with circumstances and with the varying influences of country, nation and age, so that as it is impossible to frame an universal—or as we might even say, an international—standard of æsthetics, so are we unable to bring the poetry of all times and of all peoples before one common seat of judgment.

Thus it is that it is both unjust and illogical to condemn as unpoetical any work that, while it is freely accepted as poetry by the whole people in whose tongue and for whose purpose it was written, is nevertheless lacking in those features which we deem essential to our own peculiar idea of the beautiful. The savage singer, therefore, who speaks of the lips of his lady love as being “sweeter than the hot blood of the enemy,” should be considered to have exercised the poetic faculty in as sure a degree as if he had sung of them as the “opening petals of a rose,” and whispered his lyric in the daintiest boudoir, rather than yelled them forth by some wild camp fire in the forest. Inasmuch as by his metaphor he has given birth to an idea at once new in construction, and in conformity with his own ideal of beauty—however dwarfed the modern critic might hold that ideal to have been—he obtains a claim to be considered as a possessor of at least one function of the poetic mind.

Presuming the above remarks to be at least approximately correct, it will be possible now to enquire into the physical bases of the function, and to attempt some explanation of the physiology or modes of action of the imaginative brain. For the performance of the simplest form of action—the reflex, or that performed without the present intervention of consciousness—the following physical condition is demanded, a central ganglion or collection of central nerve cells connected with two nerves, an afferent and an efferent. This condition

represents the simple or fundamental plan of a nervous system, and constitutes the sole nervous organisation of the lowest forms of animal life, as well illustrated in the structure of the ascidian. The central ganglion is the organ whereby the force of a peripheral stimulus is converted into the force of muscular (or it may be other) activity, and so, as it were, *reflected* to the periphery again. The nervous centre of man may be considered as made up of a vast collection of such simple nerve apparatus, and the tickled foot of a sleeping man is withdrawn because there exists in his cord certain cells capable of transmitting the stimulus of tickling into another form or aspect of force, viz., muscular action.

Much attention has of late been drawn to the fact that many actions, commonly presumed to involve in each performance an active interference of mind, are in reality purely reflex or automatic, and involve no direct effort of consciousness. Such actions have obtained the name of secondary or educated reflex acts. The nature of these acts is thus explained. Any action or movement, although at first performed consciously and with the active and evident interference of mind, may by very frequent repetition become at length automatic; what was at first a purposed act acquiring the character of those known as the purely reflex. Each repetition of the supposed action or movement will involve on each occasion a certain definite activity of the connected cells and fibres representing that act; and as we see in other instances that frequent use or activity of any organ is followed—as a consequence—by its higher structural development, so in the present instance the frequent repetition produces such organic changes in the nerve channels by which the repeated action is accomplished that it becomes to be—as Dr. Maudsley well expresses it—“organically registered” in the nerve centres.

As that author ably remarks,* “acts consciously designed at first, may, by repetition, become unconscious and automatic, the faculties of them being organised in the constitution of the nerve-centres, and they being then performed as reflex effects of an external stimulus.” So that for any given movement (to use that term generally) we may presume a special collection of central cells to be developed, and such cells may be considered to be the physical representatives in the nerve centre of the actual movement,

* “Body and Mind” p. 11.

so that a suitable stimulation of those cells will always be followed by the same movement and by none other. To take an example of these remarks from one of the more complicated mechanical actions. Any one who has observed a person engaged in the intricate process of envelope-folding will be surprised at the extreme rapidity and machine-like exactness with which the movements necessary for the folding of a recently made envelope are performed. Now, it will be found that the folder will do his work almost entirely automatically; although his hands may be active, his mind may be engrossed in other things; he may even cease to watch the movements of his fingers, and will be unaware of any direct mental effort in the complicated process with which he is engaged. Indeed were it to be supposed that the folding of each envelope involved active mental interference, and that each single movement was guided by consciousness, then the necessary manipulation would involve an amount of mental energy most exhausting, if not absolutely impossible of being maintained. Now, in the first essays of his business the folder will perform each movement deliberately and with conscious effort, the process will be slow and exhausting, each motion will be guided by the mind and will be carried out with a deliberate purpose and in a definite and pre-determined manner. But by frequent practice of his art, the workman will become at each repetition more and more expert, every day he will be aware of less and less effort, and every day he will involve less and less the action of consciousness, until at last his fingers will move under the stimulus of an unfolded envelope without his being scarcely conscious of their activity. In this case the same actions, elaborate and complicated though they be, have been performed a vast number of times; the same nervous paths have been traversed over and over again, until at last what was once a tangled way requiring an effort for a passage to be forced, becomes a clear and well marked path; just as frequent footsteps will render evident a road that might once have lain hidden and unknown. Here the stimulus, which may be represented by the presence of an unfolded envelope (although many other factors are involved) travels along certain centripetal paths to definite cells situate in the central nervous system; by these it is reflected centrifugally along other channels equally defined, until at length it appears in the form of a regular muscular movement. Frequent repetition will render the development of these paths of conduction more and more perfect as regards the particu-

lar actions they are instrumental in displaying ; so that each action or group of actions may be finally regarded as organically registered in the central cells, and these central cells as organically connected with a certain stimulus on the one hand and defined muscular movements on the other. At the period when the nervous path was imperfectly organised, the guidance of the mind would be required for the proper conduction of the stimulus and for the proper performance of its corresponding movement, but as its organisation is rendered more complete, so mind becomes less and less actively involved ; the nerve path—if it might so be called—becomes organically established and the action automatic. So that we may consider that in the nervous centre of any envelope folder (to adhere to the same illustration for simplicity's sake) the movements of the hands required to fold an envelope are represented by a definite collection or series of cells, which, when suitably stimulated, will always produce the same definite and known group of movements.

An exactly similar condition may be argued to hold good in the case of mental processes, even in those that are most intricate. Acts of mind that are, in the first instance, originated by distinct volition, and attended by consciousness, may become at length to be performed quite automatically and without any conscious intervention. From frequent repetition they become organically registered ; are physically represented in the anatomical structure of the brain, and, in all their connections and modes of action, are exactly to be compared with those so called secondary reflex acts of which mention has just been made. In this manner—as will hereafter be shown—ideas come under automatic influences ; involved processes of thought exercise their power, after a while, with no evidence of consciousness ; whole methods of reasoning and elaborate bases for judgment become organically registered in the brain, and are used in further activities of the mind in a manner exactly similar to that displayed by ordinary acquired reflex acts. Memory depends merely upon the organic stability of certain facts and items of knowledge and experience, and intellectual growth or development is dependent for its progress or stagnation upon the organic perfection and structural completeness of the brain itself. Every idea, every definite thought, every distinct mental process, every item of knowledge or experience may be considered to have its proper or organic representative in some portion of the brain ; so that we may in

imagination conceive that it would be possible to place a probe point upon some certain cell or cells within the brain, and say "here is represented this or that idea, this or that detail of knowledge, this or that process of mind;" and conceive that a suitable stimulation of those structures would call into active being the thought, idea, or mental process that they organically represent, and that their destruction would be followed by a loss of all appreciation of those processes, and by a total cessation of their activity.

An object, for example, of peculiar conformation, such as an irregular piece of stone, is brought before the notice of an individual. The details of its form and peculiarities are carried to his nerve centres by, it may be, the myriad centripetal fibres that are called into activity in the estimation of form. It is either, we will suppose, minutely and attentively examined at once, or is brought before the notice with great and deliberate frequency. In either case, by repetition of the stimulus, and frequent reproduction of its effect, the mental process whereby that piece of stone is recognised as of a certain shape becomes organically represented in the brain; the appreciation of its details, which was at first affected by conscious effort and active agency of mind, is at length produced with no implication of consciousness; and, as common language would have it, the object becomes "known" or "familiar," its details are "remembered," and its peculiarities "impressed upon the mind." Is any apparent consciousness involved in recalling the shape and aspect of a primrose? Is not the very mention of the name alone sufficient to bring the figure of the flower instantaneously before the mind? The particle of mental energy whereby a primrose is "known" has an organic foundation in the brain, and the stimulus required to revive that knowledge (or in other words to reproduce the effect it originally established) expends itself with no more call upon consciousness than is evoked by the stimulus required for the display of some ordinary reflex action in the motor system. If the organisation of the knowledge of this selected piece of stone be imperfect, a mental effort will be needed to recall its configuration to the mind, just as mental interference is required to guide those muscular movements that have but recently been acquired and so but flimsily organised. But if, on the other hand, familiarity has made that knowledge perfect, the figure would rise up,

as one would almost say, spontaneously, when the suitable stimulus is in action.

As before stated, perfection of memory depends upon the completeness with which the detail to be remembered is anatomically stored up and incorporated in the brain; and this fact is well illustrated by the mental state that is observed in cases of senile decay, and in some instances of brain disease, such as are afforded by certain varieties of insanity. The old man, whose mental and bodily powers are rapidly failing and breaking-up, and who sits propped up in his arm chair by the fire side, a more or less passive mass of structural decay, will not infrequently be enabled to recall events and details that occurred many years ago in the earlier periods of his career, while, at the same time, his memory of passing events, of circumstances but of yesterday, will be almost *nil*. He will be able to give accurate details of some important and striking incident in his early youth; but he will be at a loss to say what befell him but a day or so ago, and while rejoicing in those recollections that are the crown of "oldest inhabitants," will prove but a sorry authority on the things that be. The reason appears to be this—the incidents of his younger days have been recalled perhaps over and over again during succeeding periods of his life, and have consequently become so firmly and efficiently organised in his brain, that the recollection of them is almost automatic; but his mental faculties are now declining, organic activity is almost at a standstill, and as a consequence the power of organically registering fresh mental processes is either extremely slight or positively wanting. The nutritive power of the whole body is feeble or degenerate and incapable of displaying fresh acquirements, so that the incident of yesterday may impress the mind for the moment, but it arouses no structural activity, it acquires no definite organic status, and the event is so far obliterated and the remembrance of it lost. The same condition of memory may be observed, and often in even a more marked degree, in the disease known as general paralysis of the insane.*

(To be continued.)

* Paper by author in "Journal of Psychological Medicine," October, 1876.

The Electro-Neural Pathology of Insanity. By A. H. NEWTH, M.D.

The macroscopical and the microscopical researches on the pathology of the brain, in insanity and other neuroses, though hitherto carried on with zest to an almost unlimited extent, have yet been devoid of any very definite trustworthy results. Nor is this to be wondered at when we consider that infinitesimal particles, acting on the nervous system, are capable of producing very decided effects. Thus, a distinct sensation of smell is produced by so small a quantity of odorous particles as to be practically immeasurable. Therefore, the wonder is, as Dr. Maudsley observes, that any morbid appearances should have been expected to be found in many cases of insanity.

But that there must be some physical causation for disturbed mental activity is beyond question; even if purely psychical causes are recognised in some cases. How else is it possible to explain the emotional or mental disturbances arising from purely organic effects, as affections of the liver, the heart, etc., and their immediate relief when treatment is successfully directed to these. So also the sudden accession of a fit of mania, and its sudden disappearance, the periodical relapses, the peculiar form the mania takes, in so many cases being evidently due to reflex activity, are all clearly dependent on some abnormal physical state, and only the most blinded, bigoted spiritualist could fail to see the fact.

While, however, this is pretty universally acknowledged by psychologists, there is still an almost total ignorance of how this physical disturbance is produced, and what it is. That it is not, at least, in some cases, due to histological changes in the nerve elements is proved by the fact that insanity may exist without any appreciable changes in the brain, and also that there may be extensive disorganisation of the brain without any affection of the mentality. But that something has taken place to cause the deranged neurosis is a certainty, and we can be as sure of this something being a physical factor as we can that the storm of wind, which arises, we know not how, and goes, we know not whither, is due to physical forces. And as we have the assurance of the possibility that the order and nature of these storms will be some day clearly explained, so we may feel sure that in time the mental and motor storms which rage in individuals will

have their cause and order also fully explained. This will not be, however, till observers learn to turn from the post-effects to the antecedent operations. Meteorologists were at a standstill as regards practical results, so long as they contented themselves with merely examining and recording what had been, and did not endeavour to trace the causes leading up to these results. So alienists will never progress in their advancement towards a perfect study of mental disease, while they simply describe lesions which are, probably, the result of the disordered neuroses. In order to understand nervous function, either in its healthy or its diseased state, the condition, previous to its activity, either normal or abnormal, and also the condition during this activity have to be most minutely studied by means which have yet to be discovered. This, as Dr. Maudsley says, is the destined field, therefore, of future discoveries.

Nervous activity is not affected by permanent and appreciable changes in the nervous structure, it is, as electricity is, a form of energy. And it would be as reasonable to seek for alterations in the mechanical apparatus of the telegraph or telephone, when some unwonted disturbance has been observed by the erratic movements of the one, or the incoherent sounds of the other, as to try to find a pathologico-anatomical effect in all cases of disordered nerve function, as in insanity. Lesions certainly do exist in some cases to produce abnormal activity, or to suppress all or partial activity, just as mechanical disarrangement of the needle, the battery, or other parts, will interfere with the working of the telegraph or telephone.

If, then, there are no decided lesions to mark disordered nerve action, to what physical condition is this disorder due? This we have yet to seek, but it is without doubt due to some change in the static or dynamic arrangement of the molecular elements concerned in the development of nerve energy. And it is in this direction that neuro-pathologists should direct their attention, and possibly by the use of delicate galvanometers, or other kinds of electrometers, of which the necessary form and application have yet to be discovered, it may eventually be possible to arrive at some definite idea of the pathology of disordered nerve action and insanity.

For it has been almost positively shown that nerve force is correlated, if not identical with electricity, the experiments of Pflüger, Du Bois Reymond, Matteucci, and others, seem

pretty nearly conclusive on this point. Granting this, we may reason from analogy that, as the electro-motor force of conductors may be altered, either in intensity or effects, by external circumstances, so the neural force may be changed by some variation in the surroundings of the nerves, without any material alteration taking place either in the central or peripheral termination of the nerves, except, perhaps, such as might arise from the effects of the disordered nerve action.

It has been suggested, and with great probability, that the electro-motor and electro-sensorial nerve molecules are arranged in a peri- (or di-) polar series, which touch each other by their positive poles. This state, corresponding to the "open" condition of an electric battery, is easily influenced by surrounding circumstances, which act either continuously or temporarily and cause either a permanent or temporary or an intermittent disarrangement of the nerve molecules. The effect of these extraneous influences may be to cause the nerve to act irregularly, by intermitting the current, to increase, decrease, or abolish its effects by induction, or even to reverse the current, so that a centrifugal is changed to a centripetal one, or *vice-versa*. If this is so, we may have, here, the germ of a fact which will explain many neuroses. Thus, if we take a motor nerve of the arm, for example, and imagine any of these effects produced in it, we shall have, with an intermitting current, a trembling of the limb, as in paralysis agitans, *delirium tremens*, etc. Neither of these diseases has any definite material lesion, so they both may arise from causes which may be considered as having an analogy with inductive processes. If there is an induced current so acting as to diminish the normal current, then effects, such as paralysis, or anæsthesia, are produced; if it acts so as to increase the nerve force, then such phenomenon as excessive motor activity or hyperæsthesia is the result, according as the action is on the motor or sensory nerves.

Thus, hydrophobia may be a disease which is dependent on induced neural activity, though the cause of this induction has yet to be found. So also epilepsy, and here we may, probably, be able, at least, to imagine a condition in which the electro-motor force that manifests itself in the peculiar convulsions has been gradually accumulating during the remissions, either around the efferent nerves, or at some other part. This accumulation increases, until, at length, it reaches a state when it can no longer remain quiescent,

but, bursting as it were through the barriers which bound it, gives place to convulsions by violently affecting the nerves of the muscles which come within its influence; it may also be started into action by some exciting cause. If this is correct, it may serve to explain why remedies which check the fits for a time frequently cause them to be much more violent when they occur, the induced nerve force having accumulated during the intervals to an increased extent. So also hysteria, chorea, hysterico-chorea, and other analogous affections, where there is no lesion to account for the symptoms, are possibly due to nervous induction.

Now these effects are not only probably the result of an induced electric state, dependent on changes in the surroundings of the nerve, but they may also be caused by whatever increases the nerve force, without proper opportunity for it to expend itself in a normal manner. Thus, some sudden shock to the nervous system, as hearing affecting news, causes startings of the limbs, and may frequently originate epilepsy, chorea, or other nervous affections. This may be explained by the fact that the volitional power has sent, by whatever means it uses to do so, a larger supply of nerve force along certain nerves than they can use up, either by motor effects, or otherwise (the motor effects being, of course, spasmodic movements), a residuum is left, which has a tendency to increase and relieve itself periodically.

If we now pass from the consideration of nerve force expending itself in muscular action, to nerve force acting mentally, we may arrive at the same analogous results. The formation of an idea has as much connection with nerve action as the motion of a muscle. If, then, we can understand that the nerves supplying ideas are influenced in the same way as motor nerves are, that is, as we have supposed, by induction, we may readily comprehend how this induced action will occasion perverted ideas. In this way all the strange delusions of the maniac may readily be accounted for. It will also explain how it is that a maniac, during his periods of excitement, when not only his ideas are in a morbid state of activity, but also his whole muscular system is violently contorted, or otherwise acting strongly is so powerful that it requires several able-bodied men to restrain him. He must have some addition to his nerve-force, for, in his ordinary state, he could not will to exert such strength. This addition is the super-added nerve force, received from induced or other effects.

It is not improbable also that, working with this idea, we may explain some of the peculiarities of insanity, such, for instance, as *general paralysis of the insane*. This disease is pretty generally characterised by a wasting of the nerve fibres, not that this wasting is peculiar to this disease, for it is also seen in *sclerosis*, etc., but it is certainly an accompaniment of it, whether as a cause or effect is undetermined; but, so constant is it, as a section of any large nerve will show, that it is a question whether we may not regard *general paralysis*, or *paresis*, or *progressive paralysis*, as really dependent on this atrophic state, or, at least, so associated with it as to be, with other effects, pathognomonic of it. Then, would it not be better to discard the old, inconvenient, confusing terms, and apply the name to it of *Progressive Nerve Atrophy*? This would correspond to progressive muscular atrophy, a disease with which it has many correlative symptoms. It may be objected to as introducing a new term, when the old has become recognised, but this conservatism is not well. Medical and scientific terms can never be too correct, for if they are not supported by pathology, or do not express correct ideas of those things for which they stand, they obscure the study of the facts. For men's minds are so prone to association of ideas, that an incorrectly termed scientific fact or disease is almost certain to be connected with erroneous ideas of that disease, associated with the incorrect terms.

The peculiar ideas of strength and grandeur, which are so prominent a feature in general paralysis, may be due to this nerve atrophy; and they may be explained in this way: the nerves being atrophied, and the nerve-producing force, whatever that is, being still in activity, there must necessarily on every effort of the will to produce nerve action, be a much larger amount of nerve force sent along the nerve than its atrophied state can convey, that is, supposing the same quantity to be sent as if the nerve were not wasted. The nerve force, which we will suppose has been sent to act on a muscle, has failed to produce action, or has only caused feeble action, not from any want of muscular power, for the muscles are generally well developed in this disease, but because there is not a sufficient nerve conductor to carry it. What, then, becomes of the excess of nerve force? It returns along the sentient nerve, and this, added to the usual recipient energy, conveys to the mind the idea of excessive power. Thus the idea of strength will be in proportion to the exertion to produce muscular activity, for the excess of nerve energy has

been added to the received impression of muscular activity increasing that idea. Thus, if the idea of strength is suggested to the paralytic, he at once imagines he is gifted with almost superhuman power. In the same way the ideas of grandeur may be explained, the recipient ideational nerves conveying a much stronger impression than is usual. These enlarged ideas are started into activity by associative or suggestive impulses—thus, give the idea of money, and the paralytic at once believes he is possessed of untold wealth. The convulsive and muscular tremors met with in this disease may also be due to the nervo-electric disturbance, by a storing up, as it were, of the electro-motor energy, and its sudden and irregular action.

Nerve action, as manifested by muscular contractions and other effects, is not necessarily dependent on a proportional amount of vigour in the individual. It is so constantly noticed in certain forms of insanity associated with general weakness, that there are an unwonted muscular activity, out of all proportion to the physical weakness, and a constant flow of perverted ideas. This neuropathologic activity is probably occasioned, not only by a super-added nerve force, but also by a change in the nerve molecules, so that a state of ‘electrotonos’ is established, probably cathelectrotonos in the centrifugal nerve, and anelectrotonos in the centripetal nerve. This change being brought about by some such influences as induce it in experimental investigations, probably the sympathetic nerves may, by abnormal activity, occasion an inductive activity by acting either directly on the nerves or through the blood. This idea of cathelectrotonos in the efferent and anelectrotonos in the afferent nerves may serve to explain the phenomenon so often seen in the insane, namely, great muscular activity, with diminished sensation.

It is so characteristic of the insane that, while frequently capable of great exertions, they are incapable of feeling pain, for they fall about and injure themselves in a way that would be most serious to a sane man, yet they seem almost unconscious of the fact. If a state of excited action is produced at the muscular termination of a nerve, and a diminished activity at the central part, then this phenomenon is easily accounted for. In the same way it will easily be understood that delusions of sight, hearing, etc., may be occasioned by this neuro-pathologic activity.

It is not to be supposed, however, that this will explain all cases of insanity or of perverted nerve action ; there must necessarily be many which are entirely dependent on nerve lesion, chiefly, perhaps, in the central organs, while others are due to disorders of circulation. In studying insanity, as, indeed, most cases of disease, we have to take into consideration not one factor alone, and work out all ideas of disorder from this factor, but to consider many factors, which are capable of producing the same effects.

It will at once occur to many that if some cases of disordered mental action are due to abnormal electro-neural states, we may have a powerful remedy in the electric battery. And this is no doubt so, the value of which has yet to be appreciated, by a careful study of suitable diseases and modes of application. In fact, the success that has attended its use in many cases has been most marked. It is needless to say, however, that this is a remedy which can only be used in the early stages of disease : when tissue changes have set in and permanent nerve lesions have been formed, it is almost hopeless to anticipate any benefit. In the same way the use of metallic applications are likely to be beneficial, by affecting the electric-neural state.

These crude ideas may probably be received with a smile of incredulity by some, and by others, perhaps, with contempt, at the author's vain attempts to explain that which is so difficult of explanation. He does not, however, pretend to have settled the ideas which he suggests, he only offers them as a sort of rough finger-post, pointing in a direction which he thinks has been too much neglected, and he believes that a more extended study of neuro-pathology will lead to results which may prove of vast and permanent good. If it does not introduce a better form of treatment, it may be useful in diagnosis, for instance, serving to distinguish curable forms, as syphilitic insanity, from other forms which are incurable.

County Government Bill. By an English Medical Superintendent.

This Bill, for the establishment of County Boards in England, contains several provisions affecting the care of the pauper insane, which renders it incumbent on us to examine carefully what will be the probable effect of the changes it produces, and its general tendency as bearing on the interests of lunacy. The principal enactment of the Bill is to take from Quarter Sessions, as now established, all administrative as distinguished from judicial business, the latter remaining with the Quarter Sessions, the former to be transacted by a new body, the County Board, constituted by equal moieties, appointed and elective members; the former to be Justices appointed by the Justices in Quarter Sessions, two for each Petty Sessional Division of the County, the latter to be elected by the Guardians not of each Union, but of each Petty Sessional Division, two in each such division; and the qualification is that they shall be guardians of that division or qualified to be guardians. The elective members of the Board to be *ipso facto* magistrates in all that regards administrative business. There are important provisions as to roads, the Board is also to appoint the Coroner; these and other matters, however, do not concern us. The items affecting Lunacy are as follows:—

S. 6.—In the case of pauper lunatic asylums, one-half of the persons appointed by the County Board to be members of any Committee of Visitors shall be elective members of the Board, and if the number of persons so appointed is not divisible by two, then the majority of such persons shall be elective members of the Board.

S. 24.—Where it appears to the County Board of any County expedient that a separate Asylum or Asylums should be provided for any class or classes of the imbecile or insane poor, who may lawfully be detained in a Workhouse, or that a separate school or schools should be provided for the instruction and training of idiotic young persons being paupers, or of any class or classes of pauper children, and that one or more of the Workhouses or parts of Workhouses in the county can properly be set apart and appropriated for any of such purposes, or where it appears to the County Board expedient that accommodation should otherwise be provided for all or any of such classes, the County Board may prepare a scheme for constituting the whole county a district, or for the combination of any unions wholly or partly within the county into a district or districts for all or any of the purposes aforesaid. Any such scheme may be submitted to the

Local Government Board, and such Board may, if they see fit, after due inquiry, make an order directing such constitution or combination accordingly.

An order under this section may be made either absolutely or with such conditions and modifications of the scheme as the Local Government Board may think fit, and shall provide for the adjustment of the rights and liabilities of the unions and parishes affected thereby, and for the payment of any compensation to which any union or parish may be entitled in respect of any Workhouse appropriated in conformity with such order. The said Board may also apply, with such modifications as may be necessary, all or any of the provisions of the Poor Law Amendment Act, 1844, and the Acts amending the same, to any such district, and to the purpose for which it is formed, so far as such provisions are applicable thereto, and may award compensation as in the case of a dissolved union under the Poor Law Amendment Act, 1867, to any person who, by reason of such order of the Board, shall be deprived wholly or in part of any office or employment, or any salary or emolument previously enjoyed by him.

Where the whole county is constituted a district, the County Board shall be the manager of the asylum or school, as the case may be, and the cost of providing and maintaining the asylum or school shall be borne by the county rate, but the cost of maintaining the inmates thereof, including the salaries of officers and servants, shall be charged to and defrayed by the guardians of the several unions from which such inmates are respectively sent, at a rate per head to be from time to time fixed by the County Board.

The County Boards of two or more counties may combine in framing a scheme under this section.

A union to which the Metropolitan Poor Act, 1867, applies, shall not be included in a scheme framed under this section.

We are unable to attach extreme importance to the provision as to Committees of Visitors of County Asylums ; at first blush one fears the Committee may have half its members of the blustering, bothering, ignorant type, of which many Boards of Guardians possess a specimen or two, and who have done so much to bring Boards of Guardians into, on the whole, undeserved contempt. Theoretically, such a result would be possible, and so far as it would be in any degree realised, would be a grievous evil.

In debate on the Bill, and in discussion elsewhere, much has been said to the effect that the county business is already most satisfactorily transacted, and that it is a mistake to remodel so successful an arrangement as the present. However this may be, and however poor an argument an appeal to a thing's being good may be against an attempt to make

it better, there can be no question that the argument applies with the greatest force of which it is capable to the management of County Asylums by Committees of Visitors as at present constituted. The condition and efficiency of County Asylums are not perfect, but they present every indication of approaching that state as rapidly and as nearly as any institution ever did; and their government by the present Committees of Visitors admitting of this progress, appears to render any interference a matter of doubtful policy. Whilst we find this remarkable success cheerfully borne testimony to by the Commissioners in Lunacy, it is well known that the satisfactory condition of asylums depends largely on the continued efforts made for that purpose by the Commissioners in Lunacy themselves; the success of their efforts has largely depended, however, not only on the tact with which the Commissioners have carried out their policy, but also on the combination of common sense and educability on the part of the visitors, which has enabled them to accept and adopt the improvements marked out by the Commissioners in Lunacy. Such considerations as these, and they might be largely amplified, point strongly to the advisability of letting well alone. Apart from the horror of a Committee of Visitors possessing several of the type of Guardians above alluded to, we hardly think the average Guardian the best type for a Visitor. He has been trained in dealing with the poor, as destitute, probably idle and improvident persons, rather than as sick. Especially he has been accustomed to the interference of the Local Government Board, without whose consent he could not appoint a porter, or even order some sugar for the childrens' pudding, and whom he is inclined to regard with a combination of fatalistic submission and of longing for rebellion. This frame of mind seems an unhappy one for making the most of the milder, but more judicious and beneficent, supervision of the Commissioners in Lunacy. In so far, then, as the alteration in the government of County Asylums is likely to be real and substantial, we think it one in a retrograde direction.

If our worst fears as to the effects of the changes on the constitution of the committee were realised, there would, in addition to the evil influence in Asylum management, be also to be considered the personal question as regards officers of Asylums, which we do not wish to unduly magnify, but which would have a substantial existence. Elective Boards, as may be frequently seen in boroughs, are not usually niggardly as

regards the salaries and pensions of their officers, but with rural guardians as the basis, we think it might prove that they were even unjustly so. As regards pensions, there are in the Lunatic Asylums in England and Wales a large number of officers who have worked on for many years at small salaries, and been quite content to work in this way, knowing that the Magistrates in Committee and Quarter Sessions were sufficiently liberal to render the pensions to which they might lay claim virtually secure; whilst the Guardian in such matters is apt to appeal to the incidence of the rates, and think that they must be saved in this way—forgetting that an officer should be paid the full value of his services, just as the butcher or baker must be paid the full value of the goods he supplies. Of course, in the long run, the officer is paid the value of his services, because better men will not serve on such terms; but a change from a better to a worse *régime* means injustice to the officers then in the service, and a rapid deterioration in the service itself.

In the matter especially of pensions, it is well to bear in mind, in any effort that our Association may think it necessary to make for the protection of their interests, that the pension accorded by the committee having to be approved by the County Board, no alteration of the provisions as to the constitution of the committee would be of much avail whilst the County Board had an inimical constitution. Indeed any objection to the changes affecting Asylum Committees are more justly against their being appointed by such a body as the proposed County Board rather than against the alterations in the Committee itself, and it must not be forgotten that the amendments proposed point to the guardian element being larger in the County Board than the Bill, as it now stands, suggests. This difficulty could only be got over by placing pensions entirely in the discretion of the Asylum Committee, or of removing Asylums entirely or partially from local control; for many reasons we cannot look on the latter proposal with great approval.

Why it is enacted that the committee should consist of equal numbers of appointed and elective members is not very clear; probably because its powers and duties not being in any other way interfered with, it was wished to divide it as equally between the two classes of members as the Board itself is divided; the appointing body being, however, so divided, it seems an unnecessary refinement to limit the power of the Board to appoint whom they choose.

There is another objection of a somewhat different character to be made against the constitution of the Asylum Committee. The Committees at present consist largely of the same members from year to year, and that they should do so is unquestionably most important for the satisfactory conduct of their duties. But there is great danger, in the Committee under the Bill, that the one first appointed will differ in its members very largely from the retiring committee, and that since the County Board is annual, the elective members at least will vary largely from year to year.

Our fears, however, as to the *personale* of the Committee of Visitors under the Bill proving open to objection are, as we have already said, by no means extreme, since we agree very much with those who expect the elective members of the County Board will be largely selected from the active magistracy of the county, and that others, if not magistrates, will be persons of a similar type, much more frequently than of the worse type of Guardians.

We have one more objection to raise here ; it is one which did not occur to us till after careful reperusal of the Bill. It is this : the Bill is one for the improvement and encouragement of localised government, but it appears to us to admit a thin end of the wedge of centralisation into county business. The business of Quarter Session was entirely independent of the Local Government Board, but now the Local Government Board are following the elective members, the Guardians, into county business : true it is in matters previously under its control, but not the less, it is bringing it into the sphere of county business, where it will probably by degrees grasp everything.

The power given by section 24 is most important ; no doubt the present Quarter Sessions in possessing powers to provide Lunatic Asylums might, under that name, found Imbecile and Chronic Asylums and Idiot Training Asylums ; but practically they have not done so. This clause, however, provides for their being constructed as being legally workhouses on the same footing as the Metropolitan District Asylums, though the terms of the clause do not appear to place this construction beyond doubt. We do not see any great objection to this plan, except that the policy of recognising by statute that insane persons may be "lawfully detained" anywhere, except by their immediate relatives, without being duly certified, has always appeared to us a

most doubtful one. Indeed we do not believe that any "imbecile or insane poor may be lawfully detained in a workhouse." That it is done, and in the case of the Metropolitan District Asylums with satisfactory result, does not alter the law. Not only is it in direct contravention of the Lunatic Asylums Act, but is an undue interference with the liberty of the subject, enabling so-called lunatics to be spirited away without proper investigation, frequently merely because they are troublesome paupers to be got rid of on any terms.

No lunatic should be detained in any workhouse, unless its arrangements have been properly modified for the purpose, *i.e.*, unless it is really an imbecile asylum, and then the provisions as to certificates, &c., of the Lunatic Asylums Act should be observed. The Commissioners in Lunacy have to report yearly on the difficulty of dealing with patients in workhouses, asserting often that they are not even fed properly.

As we read the statutory enactments (25 & 26 Vict., c. 3, s. 20) with reference to the existence of lunatics in workhouses, they only give a permissive sanction to their remaining in the workhouses on the same terms as other paupers, but no power to "detain" them, such as exists in the case of patients in asylums, although the word detain is the one employed.

Another objection to the clause is that the establishment of Training Asylums for idiot children should be compulsory and not permissive; this is sufficiently proved by the report on the subject of the Charity Organisation Society, and is the more necessary because the number of subjects of this kind is in each county, except perhaps the largest, so small as to require a union of counties for the purpose, which will only rarely, if ever, be done under a permissive clause. We are very doubtful whether asylums for chronic lunatics ("those who may be lawfully detained in a workhouse") are wanted in the agricultural counties. But especially in these, as in all, more frequent supervision and more efficient care are required for those who are lodged out; and with such care and supervision provided, it would be found, at least in agricultural counties, that their numbers might be increased, instead of as at present constantly diminishing by crowding them into asylums. With these amendments we should consider the clause a most satisfactory one. We would place with the County Board the whole care of the pauper

insane of the county; and it is because it is a step in this direction that we welcome this clause, whilst we recognise the defects that we have drawn attention to. We are also inclined to think that the grip taken by the Local Government Board in the matter is rather too firm. This may perhaps be necessary, as schools for pauper children are dealt with, together with the Imbecile Asylums. Why the sick were not dealt with as in the Metropolitan district, at the same time, is puzzling to any one who knows how inadequate the staff and arrangements of many small country workhouses are to properly care for the sick who must frequently be among their inmates, a circumstance frequently urged when paralytics and patients of that class are brought to asylums from workhouses. What becomes of patients similarly in need of care, whose mental state does not admit of their removal to the asylum, we do not know.

Briefly to sum up our conclusions on the lunacy matters dealt with in the Bill, they are—

1. We should prefer the Committee of Visitors to be appointed at the discretion of the County Board, with the proviso that a majority of the members shall be Justices of the Peace.

2. Greater continuity with the present committee on the part of the new Committee from year to year.

3. Some provision for equally liberal treatment as to salaries and pensions to that which present holders of offices in County Asylums may at present reasonably expect.

4. The provision of idiot schools should be compulsory, as should unions between counties which have less than say 200 suitable inmates for such schools.

5. The care and supervision of all the pauper lunacy of the county, indoor and out, should rest with the County Board.

6. Idiot Schools and Chronic and Imbecile Asylums should be placed under the Lunacy Act.

7. The tendency to centralisation rather than localisation is too distinctly indicated in the appearance of the Local Government Board in matters of county business.

CLINICAL NOTES AND CASES.

Case of Epilepsy, involving the question of Criminal Responsibility. By G. MACKENZIE BACON, M.A., M.D.

The following case is of medico-legal interest, as illustrating the question of the moral responsibility of Epileptics. Where the mind is permanently affected or enfeebled, or there are obvious delusions, there can be no doubt as to the force of the plea of insanity in a criminal charge, but it is very different when the patient is apparently sane, and when the epileptic seizures are of so slight a character as to escape recognition by the many. Moreover, though it is well known to most medical men, that the minor forms of epilepsy are more charged with danger to the mind than the more forcible explosions, such knowledge is very far from general, and has filtered, apparently, much more slowly through the immeasurable depths of the legal mind than some other of the few facts in medical experience that lawyers have as yet absorbed. For these reasons it may be useful to put on record a case which illustrates the question of criminal responsibility in the "smaller" epileptic attacks.

The case was that of a youth of 19, who was employed in the Norwich Post-office, and who had opened some letters and abstracted the contents. The usual trap having been set, the youth was caught, and he was tried at the Winter Assizes at Cambridge, in Jan., 1878, before Baron Huddleston. The facts were few and simple, and were not disputed. The only defence was, that the prisoner was not responsible for his acts by reason of disease.

This defence rested almost entirely on the evidence of Dr. Bacon, who had examined the prisoner once, and then only two days before the trial.

It will, perhaps, be the fairest course to give the account of the trial from a local newspaper, so far as it affects the medical aspects of the case, but I may say, by way of introduction, that it was abundantly proved, though not displayed at the trial, that the youth had had for some time slight epileptic seizures, during some of which he was even semi-conscious, leading him to beg once of the person with whom he lodged, that he might not be buried if found apparently dead, as he had felt during these attacks that he was regarded as dead or dying by on-lookers, and was aware of their remarks, though unable to help himself or speak. It was also

shown that he had *never converted to his own use or benefit any of the property he had accumulated*, though much of it was of a nature easily turned into money. The letters he had written were utterly at variance with his natural character or habits. He had changed in disposition towards his family, and at the time of his trial was utterly insensible to the affair. He was a steady and well-behaved youth, and not given to drink or dissipation, &c.

Mr. Blofeld addressed the jury, and said that he admitted the facts, but contended that prisoner was not conscious at the time that he committed the offence. He hoped to prove this, and for this purpose should call Dr. Bacon, the Medical Superintendent of the Cambridge-shire Lunatic Asylum at Fulbourn, who had studied this subject. The prisoner belonged to a very respectable family. For the first six or seven years of his life he had been subject to convulsive fits, when they ceased, and his parents hoped that he had grown out of them. His father was a civil engineer, and in 1873 had some work which led him to go and live at King's Lynn. There the prisoner exhibited some eccentricities. He dressed up in policeman's clothes. He had for sometime been a sorting clerk at Norwich Post-office, and about a year ago the fits came on him again, and were of considerable violence. One lasted for about eight hours. On September 2nd, a month before the period of this charge, he had a serious fit at the sorting table in the Post-office van between Ely and Norwich. He had to be taken out at Wymondham and left there. His brother went down the next morning to him, and would describe his condition. A fortnight after, whilst out with another clerk, he went into a public-house, and had no sooner drank a glass of ale than he fell into a fit. The medical men would show that disease of the brain resulted from epileptic seizures. The following two letters were written by the prisoner to his brother, and they were certainly singular productions, and could scarcely have been written by anybody who was sane. The first was written by him whilst he was on a visit at Lynn, and was as follows:—

St. John's School, King's Lynn, 7th October.

My dear Guppy,—Slap, bang! here we are again. Don't forget to go on duty for me to-morrow night (Monday). Who said, "Shrimps, guinea pig?" Tell Billy White not to forget three till five on Tuesday. Whoa, Emma! Keep your eye on Muggles. How about the leg of beef? What did you get in the grocery line yesterday? Wooden lamb. Kingbury Farm. Just two of those little cakes. Threw thirty and then lost. Ha, ha! Course you went to tea at St. John's to-night. Gave your love to Annie, and she returned it. Ernest asks me to get you to give his love to Lydia Hartley. Who won at speculation, you brute? Waiter, two of soup and one of gravy. I will stir my own fire, if you please. Wretched sleeper, horrid sleeper. Went to Park yesterday; enjoyed it much; saw

some splendid dogs. See plenty of puppies in Norwich. How are you, hump and hump. I wonder who paid for Tom Arger's glass of beer yesterday morning. Another mark. Oh, toy, you ape, ugly looking sweep, why don't you put an end to yourself? Take a razor in his hand, like a butcher does his knife. Now I must close with great weeping and smashing. Love from 3 feet.

Your obedient servant,

GUTS, *alias* MILCH.

Thank Dot for his letter, but he's not right.

This letter, prisoner's brother would tell them was perfectly incomprehensible to him. The second letter was written to his brother shortly after, when he had gone to London :—

Post-office, Norwich, Oct. 16, 1877.

My dear Colonel,—A nice sort of fellow you are not to let us know you arrived safely. A punch of the head when I see you for that. Now I remember it Sam Chaplin wants to know if it was you who wanted a ticket for a set of quadrilles up at the barracks. It is next Friday evening ; so please let me know before that time. Busted the controlling officer this morning ; did not get here before 4.15, he at 5. That bad old man Chump had not time to call me, so he said, "Never mind, I shan't have time another morning." I went up to Townshend's last night. Did not smash any one's corns, thank you. I wonder who was turned out three times of 1st class carriages. Oh, lor ! oh, lor ! what creatures to be sure. If you behave yourself and answer this letter I shall, if the train is not late, meet you on Thursday evening. Let's see, you are on, are you not, on the following morning ? Ha, ha ! I don't laugh at you. One thing you omitted to do when on the platform, and that was to kiss your little brother. I wish Lacey had done so. Only got to the station three-quarters of an hour before the train started, and then lost it. Keep your eye on Muggles. I suppose before this you have seen G. A. W. Very cold here ; my hands are almost perished. And then half and up you come. Madame Angot last week at Vaudeville. Don't say the bet was not good, as the news was down on the Saturday night. Hudson is better. They have commenced the circus. How is little Piggy Pussie ? I mean Larke's shop is not yet opened. That's a hot 'un for them. Now, my dear lamb, I must close with my best love to all.

Your affectionate brother,

FREDERICK PATON, *alias* LEGS.

George Mackenzie Bacon (by Mr. Blofeld) : I am an M.D., and Medical Superintendent of the County Lunatic Asylum at Fulbourn. I have for the last fifteen years resided in the Asylum, and for eighteen years past I have devoted my life to the subject of lunacy. Epileptics form a large proportion of the patients in every Asylum. Long continuance of epilepsy invariably impairs the mind in one way or another. In many of the chronic cases the patients are very much

addicted to the habit of collecting rubbish or trifles and secreting them. I mean such things as little pieces of wood and buttons.

By the Judge—Money and valuables would not lie in their way. I am speaking of patients in the Lunatic Asylum. A person may suffer from an acute attack of epilepsy, and after the fit recollect what has passed. Where there are continuous attacks the mind recovers its balance in time.

By Mr. Blofeld—I have examined the prisoner. I went over to the gaol at Norwich for the purpose. I observed that he was entirely insensible of the position in which he was placed. He was quite indifferent to it. He had no healthy aspect of intelligence. The pupils of the eyes were dilated and did not act properly. This indicated that something was wrong in the condition of the brain. He described to me spontaneously symptoms which satisfied me that he had been labouring under the frequent occurrence of slight epileptic attacks. There is one period of these slight attacks which consists of a loss of consciousness. It is well known that the lesser forms of epilepsy, which are attended with the least physical effects, produce a much more deteriorated condition of mind in the course of time than do the more serious convulsions, partially but not wholly through their repetition. I am sure that the prisoner had had frequent slight attacks from the description he gave me of his symptoms.

By the Judge—When I examined him he was quite rational as far as his words went. He knew right from wrong as far as the main fact goes.

By Mr. Blofeld—My attention was attracted by his head, which I examined, and found it was ill-formed.

By the Judge—Epilepsy is very often hereditary.

By Mr. Blofeld—I attach importance to the fact of his uncle having been in a lunatic asylum, in considering the case.

Mr. Blofeld asked the witness whether, having heard the evidence, and as the result of his examination, he thought the prisoner was responsible for his actions when he took the letters.

His Lordship ruled that the question could not be put, saying that he had to take care that the witness did not assume the functions of the jury.

Witness—The prisoner described to me sensations which were followed by temporary loss of consciousness, during which he would not know what he was about. I am speaking of a physical condition of body. Epilepsy is a positive physical disease. It is an absolute fact that this condition of body is experienced.

By Mr. Blofeld—I consider he was suffering from slight epileptic attacks frequently, and I believe, from what he said, that at the time he had these attacks he suffered from temporary unconsciousness produced by these slight epileptic attacks. It is an acknowledged fact that people can suffer unconsciousness for a time without attracting the notice of outsiders. Such partial unconsciousness would be followed by periods of confusion of mind.

By the Judge—If he was in a state of unconsciousness such as I have described, he would not be able to tell by feeling of a letter the presence of a ring and money in such letter.

By Mr. Payne—It would be absurd to say that in December he was suffering from the effects of the fit in September; that is not what I have said or meant. It is an entire misrepresentation.

The Judge—I understand you to say that there are no doubt cases of persons suffering from epilepsy who are unconscious of their acts.

Witness—Yes.

The Judge—And that in such cases when the attacks are frequent and slight, they produce a diseased mind.

Witness—Yes; a diseased condition of mind.

The Judge—But he would have lucid intervals.

Witness—Yes.

The Judge—Your knowledge of whether he had been suffering from such disease would be a matter of evidence. You would be influenced in your judgment more by his acts than by what he said, would you not?

Witness—No.

The Judge—There are some persons who are suffering from delusions which render them not amenable to the law. How do you draw the conclusion that a person who suffered from epilepsy at the time that he committed certain acts was suffering from delusion or not?

Witness—From what the person told me. The prisoner said: “I am frequently seized with pains about my body, and particularly here (pointing to the region of his stomach). At such times, after about a minute I felt giddy and dizzy, and lost my head and felt faint.” He said that at such times he had been obliged to sit down on a stool, and desist from what he had been doing, or go into the fresh air, and that sometimes he had gone to have a glass of beer to revive himself. He said it was after these attacks he had tampered with the letters and things. I believe the prisoner’s statement undoubtedly, because it coincided with what I should expect to find.

The Judge—Does a person recollect it afterwards?

Witness—Yes.

The Judge—And conceals his crime?

Witness—That has nothing to do with the medical view of the case.

His Lordship pointed out that the prisoner’s conduct between 3 and 5 o’clock on the morning of the 5th of December was inconsistent with the theory of Dr. Bacon.

Mr. Blofeld summed up to the jury, and left them to say whether it would be safe to find the prisoner guilty after Dr. Bacon’s evidence.

Mr. Payne, for the prosecution, asked the jury to say whether the prisoner at the time he committed this theft was in such a state of mind as not to be responsible for this act.

The jury very quickly found the prisoner guilty.

The Judge, in sentencing the prisoner, told him he had been most ably defended. His father and brother had behaved themselves very properly in the witness box, and left the court with their respectability untarnished. The judges had by common agreement fixed this kind of offence as one to be visited with severe punishment. If the prisoner had a repetition of the fits, he would have the best medical advice. Sentenced to five years' penal servitude.

My own views were further given in the following letter to the local papers, in order to place the matter in a true light:—

TO THE EDITOR OF THE "NORWICH MERCURY."

SIR,—I beg to offer a few remarks on the case of the youth sentenced last week to penal servitude for a robbery at the Norwich Post-office, as it involves a question of public interest. The defence rested entirely on the "plea of insanity," to establish which I was called as a witness, and as my evidence is liable to considerable misconstruction, I wish to explain the view I took of the case. In the first place, I did not consider the prisoner "*insane*," but the term was used to meet the requirements of the law, and to include what was really meant, viz., that he was not responsible for his actions at the time of the thefts. The proof of this rests entirely on the appreciation of certain medical facts, and, therefore, I am not surprised that the Judge was so little affected by them, but I think the public may give a different verdict on reviewing the facts.

The following is an outline of the case. The prisoner was for the first seven years of his life subject to epileptic fits, which left him then, to recur at the age of seventeen. He was in consequence regarded by his family as not healthy, and treated differently to the rest. His father considered his conduct strange and unreasonable two years ago, and noticed a change in the nature of his letters lately, and two other men, in or near Norwich, had separately remarked his behaviour on different occasions, and said he was out of his mind. It is clear, then, that there was something very remarkable about him, even to the public eye. He had two violent fits—one in September, '77, from which he did not recover for eight hours. But on my examining him I found that he had very frequently *slight seizures*, in which he lost his consciousness for a minute or two. He did not concoct this tale to deceive me, but it is my interpretation of symptoms he described. The view I took was that he was the subject of a disease—epilepsy—in what is known as its lesser form; and from the account he gave me, I have no doubt that after he recovered his consciousness his mind remained confused and dull for some time. Now it is a *fact* that persons so affected do very odd things at such times. Medical literature abounds in such instances, and presuming my diagnosis to be correct, there is nothing strained in supposing that the prisoner was acting under a morbid influence when he

opened the letters, &c.; while this view is supported by other circumstances, such as the fact that he made no use whatever of the things he had taken, though he might easily have converted them into money. He had in his drawers a large quantity of property, rings, gloves, stamps, &c., which he had been collecting for months. Surely this is strange conduct in a common thief! I endeavoured to impress on the Judge the importance of such a disease as epilepsy in its influence on the brain and mind; but he could not understand how these small "fits" could occur without attracting the notice of others. Doubtless it sounds strange; but ask those who have studied epilepsy whether it is not true? and also that this form of the disease is the most damaging to the mind. A doctor forms his opinion by considering the whole circumstances of a case together, and I say that, considering the history of this case—the frequent fits, the fact of his having an insane uncle, the alteration in his conduct towards his brother and father, his odd ways, his mad letter written in October, his entire indifference to his fate when in gaol, and the fact that he made no use of his spoils—it is not an unfair inference that he was the victim of disease, and not crime. Such a "theory" may not appear intelligible to the public, but I submit it with all confidence to my professional brethren, and need only say in my own defence that the "theory" was not "constructed" by me to meet the case, but that the *facts* which I discovered created the theory. To suit the law, it was needful for the defence to prove the prisoner had a "fit" between three and five a.m. on a certain day, which was, of course, impossible; but I think that with such a history of *disease* as that I have detailed, the defence was a good one, and not a mere mad doctor's "theory." Whether the lawyers like to believe it or not, the fact is certain that when the mind is once affected, the influence of the disease is seen in many ways besides irrational remarks. It would be well if they knew the fearful significance of being epileptic. Then it would be possible that a Judge might realise the common fact, that the mind of an epileptic by no means returns to a normal state with reviving consciousness.

Were this a murder case, no doubt it would be re-investigated before a competent tribunal with a different result; but as it is only a vulgar incident in common life, with no sensational features of immorality or violence to rouse the British public, I suppose "justice" will have its revenge. By the term "competent" I only mean as far as weighing the value of medical facts and opinions. I gladly acknowledge the rare courtesy shown by the learned and able Judge towards a witness who gave evidence so hopelessly distasteful to a legal mind.

As for the jury — I forbear.

Apologising for the length of my remarks,

I am, Sir, yours, &c.,

G. MACKENZIE BACON, M.A., M.D.

Cambs. Co. Asylum, January 14th.

After the trial an appeal was made to the Home Secretary, before whom some fresh evidence was laid, together with a strong opinion given by Drs. Wilks and Blandford as to the effects of epilepsy on the mind, and as to the undoubted fact that the prisoner was the subject of it, and should be considered as a diseased person. The case being at present under consideration, it is hardly open to further comment now.

I may, however, add, that after reading this case in the paper, a surgeon, a stranger to me, wrote to me that he had a similar one under his care, of which he gave the following notes "in illustration of my theory:"—

"Mary S., æt. 21, one of a family of four girls and four boys. The girls are all epileptic, while the boys are not. Mary S., after most eccentric conduct for several years, has now, after trying to ruin her two sisters' characters, run away. She has kept up a systematic pilfering for years, and lately took half-a-sovereign from her father's drawer and decamped."

Notes of a Case in which Hallucinations of Four of the Special Senses were present—Recovery. By A. R. TURNBULL, M.B. Edin., Assistant Physician, Royal Asylum, Edinburgh.

A. B., aged 33, married, admitted 1st January, 1877.

History.—Disposition frank, cheerful, and sociable. Habits very intemperate of late. Patient has had one previous attack of insanity, and one of his brothers was formerly under treatment in this asylum. Causation; Predisposing—hereditary predisposition, previous attack, intemperate habits; exciting—intemperance and business anxieties. First mental symptoms—excitable, stupid and making mistakes in business, had delusions, and attempted suicide. First bodily symptoms—restless and sleepless. Recent mental symptoms—became violent towards others, and had various delusions. Patient has twice (about a month previous to admission) attempted suicide by cutting his throat; and is sometimes violent to those around him. The existing attack has lasted one month. Previous to his being brought here, patient had been under treatment in another asylum for one month.

Patient had, when a young man, led a very fast and dissipated career. Circumstances at length compelled him to enter business, and from that time he had been steady in his habits, and fairly successful in life, until about a year ago, when business difficulties began to press upon him, and he sought refuge from them in his old habits of reckless intemperance.

State on Admission.—Exaltation none. Depression considerable; is very anxious and suspicious in expression, manner, and conversation; thinks that plots have been formed to ruin him, &c. Excitement, some—is restless, wayward, and suspicious. Memory impaired as to recent events. Can answer questions correctly, and is coherent. Has delusions of suspicion; fancies that a number of people have conspired together to injure him; says that he hears their voices in the room at present speaking to him, and speaking at him in order to annoy him, &c. In appearance, is a tall, powerfully built, intelligent-looking man, with an anxious and suspicious expression of face. Pupils equal, sensitive. Nervous system—motor, normal; sensory, ordinary sensibility normal. Reflex action good. Special senses—has hallucinations of hearing. Lungs and heart healthy. Tongue somewhat glazed. Appetite fair. Bowels regular. Pulse 82, regular, rather small. Temp. 97·8°. Disease, Melancholia; Skae's Classification, Insanity of Alcoholism. Predominant features—depression and hallucinations.

Progress of Case.—I shall give only a short sketch of the progress of the case as recorded in the Case Book:—

On January 6th it is noted that patient shows hallucinations of sight as well as of hearing. The entry for January 31st states that there is as yet no improvement in Mr. B.'s mental condition. He is restless and moody as ever, refusing to occupy himself in any useful work, but absorbed in his own thoughts, and occupied with the morbid fancies of his own brain. He is completely under the influence of his delusions of suspicion, vehemently asserting that various members of his family are confined in other parts of the asylum, that there is a plot to prevent his communicating with them, &c.; and the hallucinations both of hearing and of sight remain persistently, and show as yet no signs of disappearing. On February 28th it is noted that patient still expresses numerous delusions of the same character as before, and that he has shown hallucinations of the special senses of touch and taste, in addition to those of hearing and sight formerly recorded. He says that he hears the voices of different members of his family talking on the floor above him; he points from the window and asserts that a few minutes ago he saw his brother entering a house near at hand. In the morning he has sometimes made complaints that the sheets of his bed have been poisoned, maintaining that he knows this by the sensations produced in his skin; and when the possibility of such a thing is denied, he puts the sheet to his tongue, and then says, "Taste that, and you will find that it is poisoned." These hallucinations of taste and touch proved transient, disappearing in a few days, and at the end of March it is noted that Mr. B. had improved somewhat, but that the hallucinations of sight and hearing were still present. From this time onwards the patient seemed to improve slowly, and on the 29th of May he was discharged relieved,

on Dr. Clouston's recommendation that a change would be likely to do him good, and removed by his friends to another asylum, the entry in the Case Book for that date stating that he still laboured under delusions of suspicion, and that hallucinations of hearing, and probably also of sight, were still present, though much less prominent than before.

About two months after his departure from Edinburgh asylum, I received a visit from Mr. B. He informed me that he had remained about six weeks in the other asylum, and that then he had been able to return to business; and at the time of his visit to me he had been making several long journeys in connection with his business. It was easy to see that there was still a certain amount of excitement and restlessness in his manner, and he still spoke of his detention in the asylum as a mistake; but he appeared to have entirely got rid of his old delusions and hallucinations. At this time he was on probationary leave of absence from the asylum; and I have since learned that he continued to do well, and that ultimately he was discharged recovered. The hallucinations of hearing had disappeared, the patient had made a good recovery from his mental disorder, and was able to pursue his business energetically and successfully. Latterly, however, he has again been very intemperate in his habits, with the results of producing symptoms which threaten another attack of insanity.

Remarks.—In many of its features, the case above recorded is a typical example of a class of cases sufficiently familiar in asylums, namely, cases produced by excessive and long-continued indulgence in strong stimulants, and characterised by the presence of mixed depression and excitement, with delusions of suspicion. These patients are, at one or other period of their illness, often suicidal; and in three instances which I have lately had the opportunity of observing within a short period of each other, the same special delusion was very prominent in all of them—namely, that other members of the patient's family were also confined in the asylum. In these cases of chronic insanity of alcoholism, hallucinations of hearing are not uncommon, and, indeed, according to Dr. Skae, constitute one of the most constant and persistent symptoms of this form of insanity. Hallucinations of sight also occur, but much less frequently than those of hearing; and hallucinations of the sense of touch are said by Dr. Skae to be not infrequent. Hallucinations of taste and smell are rare; but when either of these senses is involved, others of

the special senses are generally affected at the same time. Mr. B.'s case is interesting as a well-marked example of the existence at the same time of hallucinations of the four senses of hearing, sight, touch and taste.

Another point worthy of notice is that, in spite of the severity and long-continuance of the symptoms, which would usually justify an unfavourable prognosis, Mr. B. ultimately made a good recovery. Hallucinations of the senses are generally considered to be of evil import, except in the acute forms of insanity. In the chronic insanity of alcoholism, hallucinations are sometimes present for a short period at the beginning, and yet the patient recovers satisfactorily; but if they persist for a length of time, the prognosis becomes unfavourable. In Mr. B.'s case the hallucinations of hearing persisted for several months, and after his admission to the asylum hallucinations of sight, touch, and taste developed themselves, and yet the patient ultimately made a satisfactory recovery.

OCCASIONAL NOTES OF THE QUARTER.

Detention of a Sane Englishwoman for Five Years in a French Asylum.

We extract the account of this most extraordinary case from the "Times" of 21st November, 1877 :—

HIGH COURT OF JUSTICE, NOVEMBER 21, 1877.

CHANCERY DIVISION.

(*Before* VICE-CHANCELLOR SIR RICHARD MALINS.)

DAVIS *v.* NATHAN.

This action, which was in form one for the administration, *simpliciter*, of the trusts of a marriage settlement, executed on the 19th of August, 1856, became, from the circumstances of the case and the shape in which it was presented to the Court, a very singular one. The only facts which need be stated by way of introduction to the judgment are briefly these :—By the settlement of the 19th of August, 1856, made on the marriage of a Miss Moses with a Mr. Davis, two funds called respectively the "father's fund" and the "husband's fund," were settled, as to the first to pay the income to Mrs. Davis for her life for her sole and separate use; and as to the second, if she survived her husband, for her absolutely. There was one child of that marriage—viz., the plaintiff—who was still an infant, and who

on his mother's death would become entitled to these settlement funds, and other considerable property, amounting altogether to about £90,000. Mr. Davis died in September, 1857. On the 12th of April, 1862, Mrs. Davis married Monsieur Mégret, a sculptor, and a domiciled French subject. By the settlement, made on the previous day—viz., the 11th of April, 1862—in the English form, and in England, a sum of £8,000, the property of Madame Mégret, was settled “in trust for her absolutely for her sole and separate use.” That settlement contained a covenant to the effect that, “If Madame Mégret, or Monsieur Mégret in her right, should at any time during the coverture become entitled to any personal property of the value of £200 or upwards” (except jewels, &c.), then Monsieur Mégret should “cause the same to be vested in the trustees of that settlement, to be held by them upon the same trusts as were therein declared of the £8,000, and upon further trusts to pay and apply or otherwise dispose of any annuity, or other life interest which Madame Mégret or Monsieur Mégret should become so entitled to, as aforesaid, for the life of Madame Mégret only,” in accordance with the trusts of the £8,000. There were several children of that marriage. In the course of the action, two questions were raised—one as to the sanity of Madame Mégret in and subsequent to the year 1870; the other as to the domicile of Monsieur Mégret in 1856. Monsieur Mégret was now living in France, apart from his wife. He contended that, as a domiciled Frenchman when he married her, he was entitled by French law to the whole of the income of “the husband's fund,” and to two-thirds of the income of “the father's fund.” He also claimed the whole of the income of “the husband's fund,” *jure mariti*, as not comprised within the covenant to settle after acquired property on the settlement made on his marriage. With regard to the sanity of Madame Mégret, Dr. Tuke and Dr. Bucknill were examined *vivâ voce* in open Court, who pronounced unhesitatingly that she was of sound mind. She herself was also called and examined; and showed no symptoms whatever of “a mind diseased.” Witnesses were also examined to prove that Monsieur Mégret's domicile was English. The further details of the case, and the effect of the evidence, and the argument in it, will sufficiently appear from the judgment, *infra*.

Mr. J. Pearson, Q.C., and Mr. J. G. Wood were for the plaintiff; Mr. Higgins, Q.C., and Mr. Alexander were for the defendant, Madame Mégret; Mr. Dundas Gardiner was for Monsieur Mégret, but adduced no evidence as to his domicile; Mr. Freeman was for the trustees of the settlement of 1856.

The VICE-CHANCELLOR said this was a very extraordinary case. The plaintiff was an infant, who, by his next friend, claimed in the action to have the trusts of the settlement of the 19th of August, 1856, carried into execution by the Court. There were two funds which were settled by that instrument; the one called “the father's fund,” the other “the husband's fund.” The first was settled on the

lady for her life, for her separate use, without power of anticipation; the second was settled on her for her life simply. Mr. Davis died in 1857. There was only one child of their marriage—viz., the plaintiff—who was entitled to the settled property, in remainder expectant on his mother's death. But his right in the funds was so clear, and the funds themselves at this moment so perfectly safe, that it was difficult to see why he should have brought this action at all. There was a most painful dispute between his mother and her present husband, and although his Lordship had frequently felt bound to express his opinion on the conduct of Monsieur Mégret, he had never found anything to condemn in that of Madame Mégret. The husband's claim to her property rested on two points; but before they were touched upon, his Lordship said he must consider the facts of the case. Madame Mégret was by birth and faith a Jewish lady, and she married Monsieur Mégret in 1862. He was then a domiciled Frenchman; he was a sculptor; but he was residing in this country. He was by birth a Roman Catholic, but in order to marry this lady he actually became a Jew, and remained a Jew for some time. Their marriage was solemnised on the 12th of April, 1862, at which time Monsieur Mégret was residing in England. It was proved in the course of the evidence that he promised his wife he would reside here, and not in France; that she should not be required to give up England, her own country, but should live here, and should not be asked to go and live in France. In fact, Monsieur Mégret was to all intents and purposes, by his own acts and promises, an Englishman. He had become such by adoption, and such he continued to be. All the evidence as to his domicile pointed one way only. He had, as every foreigner had, a right to enter into contracts in this country as an Englishman; and the law really stood as if it was that of a settlement made by an Englishman with an Englishwoman. So far, therefore, all his claim to be entitled to any part of his wife's fortune, as a Frenchman, according to the laws of France, was completely disposed of. Indeed his claim was in that respect a most discreditable one, and ought never to have been preferred at all. He was a man wholly incapable of observing any agreement. He inveigled his wife—the evidence amounted to that—into going with him to France. She never meant to remain there. She had a child, and after its birth she suffered from an attack of puerperal mania. Dr. Tuke had stated in his evidence, that although a woman might have such an attack after having had a child, and although she might very possibly suffer from a similar attack on a subsequent similar occasion, it was not likely that she would experience the same malady at any other time, or be generally subject to it. But she had been of unsound mind from that cause; and being aware of it, was, on her own application, placed in an establishment at Ivry, near Paris, under the care of Dr. Jules Luys. Within a year from the time of her going from him, she recovered, and should then have been discharged. That was in 1870. There

were no inspectors of lunatic asylums in France as there were in this country, and it was most earnestly to be hoped that what occurred in this case, could not possibly happen in England. She actually remained in confinement, in France, from 1870 till the end of 1875. Now, she had been herself examined in the course of this case, and his Lordship was bound to say that her evidence was of a most remarkable character. Her clearness of statement and accurate recollection of facts and circumstances was most singular. She said that she had written, while in confinement, to her husband, entreating to be released, but that he paid no attention to her letters, nor did he even intimate a wish to see her. Indeed, he refused to do so. She produced a letter which she had written in 1872 to the trustees of her settlement asking for an increased allowance to be made to her son. The style of that letter—the language and composition of it—was, said his Lordship, such as no Englishwoman in the British dominions could surpass, and few Englishmen could equal. But what should have been then done? The trustees should have then considered whether the writer of such a letter was a person who ought to be kept in a lunatic asylum. But she also produced another remarkable letter, which she wrote to her husband. How, in the circumstances, he could allow her to languish in an asylum was incomprehensible. But she still remained there. In 1871, when her income was about £1,200 a year, a petition was presented here by a next friend, stating that she had been confined in an asylum for the special form of insanity already mentioned, and praying that the income should be ordered to be paid to her husband. No one then for one moment suspected him of any sinister object, and his Lordship then made an order for payment of the income to Monsieur Mégret, on his undertaking to support his wife and children. Under that order Monsieur Mégret received all the income until February, 1875. Some discussion was then raised as to whether he was applying it properly. The lady had been always accustomed to the luxuries and enjoyments of life; and her family became satisfied that her husband had not spent the money upon her, as he should have done, but that he had, in fact, spent it, or the greater part of it, on himself. The order was accordingly modified, and a sum of £600 was directed to be applied by him for her use. Still he took no notice of her. She had then been four or five years in confinement, during the whole, or nearly the whole of which time she, knowing she was of sound mind, saw no one. In December, 1875, however, the family solicitor went over to Paris, had an interview with her, found that she was of perfectly sound mind and understanding, and communicated with her friends. Steps were immediately taken before the French Tribunals, and her release forthwith obtained. She was discharged from the asylum early in 1876. She then came over to England. She attended his Lordship in Chambers on two or three different occasions with reference to the place of residence for her son,

the plaintiff, to whom she said, she was devotedly attached, as much so as he was to her. Still, notwithstanding that attachment, the plaintiff preferred remaining with his stepfather, Monsieur Mégret. Why? Because the plaintiff, having been originally a Jew by birth, had been induced by Monsieur Mégret, or some one whom he had placed over his establishment, to become a Roman Catholic. His Lordship had since found that some of the conduct both of Monsieur Mégret and the plaintiff himself was very reprehensible. But with regard to Madame Mégret, she continued subject to the insulting treatment of her husband. In August, 1876, she took proceedings in the French Court for a *séparation de corps*. By the French law, before the parties could commence such proceedings, they were bound to attend a Judge, who then and there “admonished” them, and examined them to see whether a reconciliation was not possible. Accordingly Madame Mégret and her husband went before the Judge, and were duly “admonished” by him. Monsieur Mégret promised amendment, and on the faith of that she said she would return and live with him. She did so; that was in August, 1876. They then had ample means of existence; but when she did go to her husband, she found that he had taken a wretched apartment, badly furnished, and with only one servant to attend upon them. She said she did go out with him for a walk once or twice, but that when he went out alone, he locked her into the rooms. There were no proper provisions in the house. They dined at *tables d'hôte*. On one occasion he took her out for a drive. She observed that they passed the barriers of the city, and becoming suspicious of being again placed in confinement, she spoke to her husband on the subject. She even went down on her knees to him, entreating him not to shut her up any more. But he took her to an asylum at Charenton. She was then perfectly sane. She was no more fit, said his Lordship, to be then placed in confinement in a lunatic asylum than was any one now hearing his Lordship's voice. Dr. Tuke, Dr. Bucknill, and other eminent medical men had seen her, and had pronounced her perfectly sane. Dr. Bucknill had tested her most closely in two conversations of two hours' each, and was convinced of her sanity. His Lordship had seen her on several occasions, and anything more remote from insanity than her state of mind he had never known. However, as a matter of fact, Monsieur Mégret again placed her in the asylum at Charenton. His conduct throughout had been most wanton and reprehensible, most fraudulent and most false, and completely disentitled him to any consideration in decent society. Fortunately, the lady was now in this country, and his Lordship hoped she would never again be under her husband's control.

The case was decided in favour of the lady—viz., that Madame Mégret was entitled for her private use to the whole of the income of the funds in question.

In connection with this case we may quote the evidence of Mr. Phillips, Commissioner in Lunacy, and Mr. Balfour, given before Mr. Dillwyn's Select Committee on Lunacy Law. The following is Mr. Phillips's evidence:—

9748. Do you know that persons are ever moved abroad under a certificate granted in England?—No; they cannot be removed under certificate granted in England.

9749. Not legally?—No, not under certificates. The certificates would not authorise it.

9750. Have you heard of lunatics being moved abroad?—I have.

9751. To lunatic asylums?—No, I cannot say that I have.

9752. Under what authority or power are they moved abroad?—There was a case some years ago of a lady (I think it was a nun) who was taken to Belgium, which created a great stir at the time, and there was an enquiry into the matter.

9753. We had the evidence of Dr. Balfour, who, I think, told us that he had been to France, and that the keeper of a large *maison de santé* there told him that he should not hesitate to bring over a person under a certificate granted in England?—I believe it is an offence against the common law to take a lunatic, a British subject, out of England against his will.

9754. Do you suppose that would be an offence against the French law?—I cannot answer that question.

9755. You do not know of any cases in which people have been removed, except that one case of a nun?—No, I do not.

9756. You say a British subject being taken abroad against "his will" would be an offence; is a lunatic supposed to have any will?—I should think he had no will on that subject.

9757. Therefore the law could not arise there?—If you take a lunatic abroad forcibly, that is an offence against the common law.

9758. You assume, because you are obliged to put him under restraint in taking him abroad, that is against his will?—I cannot answer that question; if you mean this, may a person coax a lunatic abroad, I do not know whether that is an offence.

9759. Taking a lunatic abroad under a certificate is illegal?—The certificate is utterly worthless for the purpose.

9760. The expression "against his will," bearing in mind that a lunatic has no will, seems to leave it a very open question?—No person can be taken abroad under certificates. Certificates are documents which only have operation within the limits of England and Wales.

9761. This doctor in Paris says that he would not mind taking lunatics abroad under the certificate; but that, you say, is an offence against the common law?—Yes, against the common law of England; I believe so.

The following is Mr. Balfour's evidence in regard to the French lunacy law and practice, and the suggestion he made in regard to the protection of English lunatics abroad :—

3153. What is that system in use in France?—In the case of every private patient received into an asylum, notice is given to the prefect of police immediately on the patient's admission, and within three days he sends a special medical man, specially qualified to examine the patient in the asylum, who forwards a report direct to him. That is an entirely independent man, independent of the man who signs the medical order, and independent of the medical officer in the asylum, and he is paid by Government.

3154. I think a certificate by one medical man only is required in France?—That is so; a medical man may be either English or French; therefore an English person certified in London may be locked up in a French private asylum.

3155. Does that take place?—It does.

3156. When they are there, have they the same advantages and the same facilities for discharge when cured, as if they were in this country?—You must remember the difference is this, that if a man is taken over from England and put into a French asylum, or taken to France and certified by a French doctor, and put into an asylum, he has the same advantage, so far that the special medical man goes and examines him. But, granted he was sane, he would naturally be very much excited, and perhaps not have a very good knowledge of the language, and the chances are, would remain long enough in the asylum before he got out.

3157. How would you provide against that?—Either the asylum superintendent or the prefect of police has to report to the King's Procureur every case of insanity admitted. If some such notice were sent to the Commissioners of Lunacy in England, with regard to the case of Englishmen sent there, or to some person such as the Ambassador, the Commissioners of Lunacy in England would have a knowledge of all English subjects confined in France, and they could take any steps they thought fit to examine into the case.

3158. That, I presume, could only be done by a treaty between the two countries?—I think it is the 10th Article of the French law which provides for the notice of admission being sent to the King's Procureur. It might easily be extended, so that, in the case of foreigners, it might be sent to either the Ambassador or some other person.

3159. We could have no power of enforcing such a law as that?—No; but it is a very dangerous thing to have the power of locking up English subjects in France on one certificate.

3160. We are quite powerless in this country; any such alteration in the law must be a matter of convention between the two countries?—Yes.

3161. An Act of Parliament in this country would not be able to alter the law of France?—No; but in the same way that French subjects are confined in English asylums, it might be a mutual agreement.

Professor Tyndall on Consciousness and Organisation, Free Will, Heredity, Responsibility, &c.

On the 12th October, Professor Tyndall delivered an address at Birmingham, as President of the Midland Institute, of which the first part was devoted to a popular and most interesting exposition of “the Science of our Time,” of which the following are extracts, the one from near the beginning, and the last is the concluding portion. The whole address was one of the most happy of the recent attempts which we have seen to popularize the scientific results and tendencies of thought of the present time on these subjects.

We may, however, transport ourselves in idea into the future, and thus obtain a grasp, more or less complete, of the science of our time. We sometimes hear it decried and contrasted to its disadvantage with the science of other times. I do not think that this will be the verdict of posterity. I think, on the contrary, that posterity will acknowledge that in the history of science no higher samples of intellectual conquest are recorded than those which this age has made its own. One of the most salient of these I propose, with your permission, to make the subject of our consideration during the coming hour. It is now generally admitted that the man of to-day is the child and product of incalculable antecedent time. His physical and intellectual textures have been woven for him during his passage through phases of history and forms of existence which lead the mind back to an abysmal past. One of the qualities which he has derived from that past is the yearning to let in the light of principles on the otherwise bewildering flux of phenomena. He has been described by the German Lichtenberg as “das rastlose Ursachenhentier”—the restless cause-seeking animal—in whom facts excite a kind of hunger to know the sources from which they spring. Never, I venture to say, in the history of the world has this longing been more liberally responded to, both among men of science and the general public, than during the last 30 or 40 years. I say “the general public,” because it is a feature of our time that the man of science no longer limits his labours to the society of his colleagues and his peers, but shares, as far as it is possible to share, with the world at large the fruits of inquiry. The celebrated Robert Boyle regarded the universe as a machine; Mr. Carlyle prefers regarding it as a tree. He loves the image of the umbrageous Igdrasil better than that of

the Strasburg clock. A machine may be defined as an organism with life and direction outside ; a tree may be defined as an organism with life and direction within. In the light of these definitions, I close with the conception of Carlyle. The order and energy of the universe I hold to be inherent, and not imposed from without—the expression of fixed law and not of arbitrary will, exercised by what Carlyle would call an almighty clockmaker. But the two conceptions are not so much opposed to each other after all. In one essential particular they, at all events, agree. They equally imply the interdependence and harmonious interaction of parts, and the subordination of the individual powers of the universal organism to the working of the whole. Never were the harmony and interdependence just referred to so clearly recognised as now. Our insight regarding them is not that vague and general insight to which our fathers had attained, and which, in early times, was more frequently affirmed by the synthetic poet than by the scientific man. The interdependence of our day has become quantitative—expressible by numbers—leading, it must be added, directly into that inexorable reign of law which so many gentle people regard with dread. In the domain now under review, men of science had first to work their way from darkness into twilight, and from twilight into day. There is no solution of continuity in science. It is not given to any man, however endowed, to rise spontaneously into intellectual splendour without the parentage of antecedent thought. Great discoveries grow. Here, as in other cases, we have first the seed, then the ear, then the full corn in the ear, the last member of the series implying the first.

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We all know the effect produced on a “nervous” organisation by a slight sound which causes affright. An aerial wave, the energy of which would not reach a minute fraction of that necessary to raise the thousandth of a grain through the thousandth of an inch, can throw the whole human frame into a powerful mechanical spasm, followed by violent respiration and palpitation. The eye, of course, may be appealed to as well as the ear. Of this the lamented Lange gives the following vivid illustration :—A merchant sits complacently in his easy chair, not knowing whether smoking, sleeping, newspaper reading, or the digestion of food occupies the largest portion of his personality. A servant enters the room with a telegram bearing the words, “Antwerp, &c. . . . Jonas and Co. have failed.” “Tell James to harness the horses!” The servant flies. Up starts the merchant wide-awake, makes a dozen paces through the room, descends to the counting-house, dictates letters, and forwards despatches. He jumps into his carriage, the horses snort, and their driver is immediately at the Bank, on the Bourse, and among his commercial friends. Before an hour has elapsed he is again at home, where he throws himself once more into his easy chair with a deep-

drawn sigh, "Thank God I am protected against the worst, and now for further reflection!" This complex mass of action, emotional, intellectual, and mechanical, is evoked by the impact upon the retina of the infinitesimal waves of light coming from a few pencil marks on a bit of paper. We have, as Lange says, terror, hope, sensation, calculation, possible ruin, and victory compressed into a moment. What caused the merchant to spring out of his chair? The contraction of his muscles. What made his muscles contract? An impulse of the nerves, which lifted the proper latch, and liberated the muscular power. Whence this impulse? From the centre of the nervous system. But how did it originate there? This is the critical question. The aim and effort of science is to explain the unknown in terms of the known. Explanation, therefore, is conditioned by knowledge. You have probably heard the story of the German peasant who, in early railway days, was taken to see the performance of a locomotive. He had never known carriages to be moved except by animal power. Every explanation outside of this conception lay beyond his experience, and could not be invoked. After long reflection, therefore, and seeing no possible escape from the conclusion, he exclaimed confidently to his companion, "Es müssen doch Pferde darin sein"—"There must be horses inside." Amusing as this locomotive theory may seem, it illustrates a deep-lying truth. With reference to our present question, some may be disposed to press upon me such considerations as these:—Your motor nerves are so many speaking-tubes, through which messages are sent from the man to the world; and your sensor nerves are so many conduits through which the whispers of the world are sent back to the man. But you have not told us where is the man. Who or what is it that sends and receives those messages through the bodily organism? Do not the phenomena point to the existence of a self within the self, which acts through the body as through a skilfully constructed instrument? You picture the muscles as hearkening to the commands sent through the motor nerves, and you picture the sensor nerves as the vehicles of incoming intelligence; are you not bound to supplement this mechanism by the assumption of an entity which uses it? In other words, are you not forced by your own exposition into the hypothesis of a free human soul? That hypothesis is offered as an explanation or simplification of a series of phenomena more or less obscure. But adequate reflection shows that instead of introducing light into our minds it increases our darkness. You do not in this case explain the unknown in terms of the known, which, as stated above, is the method of science, but you explain the unknown in terms of the more unknown. The warrant of science extends only to the statement that the terror, hope, sensation, and calculation of Lange's merchant are psychical phenomena produced by, or associated with, the molecular motions set up by the waves of light in a previously prepared brain. But the scientific view is not without its own difficulties.

We here find ourselves face to face with a problem which is the theme, at the present moment, of profound and subtle controversy. What is the causal connexion, if any, between the objective and subjective—between molecular motions and states of consciousness? My answer is, I know not, nor have I as yet met anybody who knows. It is no explanation to say that the objective and subjective effects are two sides of one and the same phenomenon. Why should the phenomenon have two sides? This is the very core of the difficulty. There are plenty of molecular motions which do not exhibit this two-sidedness. Does water think or feel when it runs into frost-ferns upon a window-pane? If not, why should the molecular motion of the brain be yoked to this mysterious companion—consciousness? We can present to our minds a coherent picture of the physical processes—the stirring of the brain, the thrilling of the nerves, the discharging of the muscles, and all the subsequent mechanical motions of the organism. But we can present no picture of the process whereby consciousness emerges, either as a necessary link or as an accidental by-product of this series of actions. Yet it certainly does emerge—molecular motion produces consciousness. The reverse process of the production of motion by consciousness is equally unrepresentable to the mind. We are here, in fact, upon the boundary line of our intellectual powers, where the ordinary canons of science fail to extricate us from our difficulties. If we are true to these canons, we must deny to subjective phenomena all influence on physical processes. The latter must be regarded as complete in themselves. Physical science offers no justification for the notion that molecules can be moved by states of consciousness; and it furnishes just as little countenance to the conclusion that states of consciousness can be generated by molecular motion. Frankly stated, we have here to deal with facts almost as difficult to be seized mentally as the idea of a soul. And if you are content to make your “soul” a poetic rendering of a phenomenon which refuses the yoke of ordinary mechanical laws, I, for one, would not object to this exercise of ideality. Amid all our speculative uncertainty there is one practical point as clear as the day—namely, that the brightness and the usefulness of life, as well as its darkness and disaster, depend to a great extent upon our own use or abuse of this miraculous organ. We now stand face to face with the final problem. It is this. Are the brain, and the moral and intellectual processes known to be associated with the brain—and, as far as our experience goes, indissolubly associated—subject to the laws which we find paramount in physical nature? Is the will of man, in other words, free, or are it and nature equally “bound fast in fate?” From this latter conclusion after he had established it to the entire satisfaction of his understanding, the great German thinker Fichte recoiled. You will find the record of this struggle between head and heart in his book, entitled “*Die Bestimmung des Menschen*”—“The Vocation of Man.”

Fichte was determined at all hazards to maintain his freedom, but the price paid for it indicates the difficulty of the task. To escape from the iron necessity seen everywhere reigning in physical nature, he turned defiantly round upon nature and law, and affirmed both of them to be the products of his own mind. He was not going to be the slave of a thing which he had himself created. There is a good deal to be said in favour of this view, but few of us probably would be able to bring into play the solvent transcendentalism whereby Fichte melted his chains. Why do some of us regard this notion of necessity with terror, while others do not fear it at all? Has not Carlyle somewhere said that a belief in destiny is the bias of all earnest minds? "It is not nature," says Fichte, "it is freedom itself by which the greatest and most terrible disorders incident to our race are produced. Man is the cruellest enemy of man." But the question of moral responsibility here emerges, and it is the possible loosening of this responsibility that so many of us dread. The notion of necessity certainly failed to frighten Bishop Butler. He thought it untrue, but he did not fear its practical consequences. He showed, on the contrary, in the "Analogy," that as far as human conduct is concerned the two theories of free will and necessity come to the same in the end. What is meant by free will? Does it imply the power of producing events without antecedents—of starting as it were upon a creative tour of occurrences without any impulse from within or from without? Let us consider the point. If there be absolutely or relatively no reason why a tree should fall, it will not fall; and if there be absolutely and relatively no reason why a man should act, he will not act. It is true that the united voice of this assembly could not persuade me that I have not, at this moment, the power to lift my arm if I wished to do so. Within this range the conscious freedom of my will cannot be questioned. But what about the origin of the "wish?" Are we, or are we not, complete masters of the circumstances which create our wishes, motives and tendencies to action? Adequate reflection will, I think, prove that we are not. What, for example, have I to do with the generation and development of that which some will consider my total being, and others a most potent factor of my total being—the living, speaking organism which now addresses you? As stated at the beginning of this discourse, my physical and intellectual textures were woven for me, not by me. Processes in the conduct or regulation of which I had no share have made me what I am. Here, surely, if anywhere, we are as clay in the hands of the potter. It is the greatest of delusions to suppose that we come into this world as sheets of white paper on which the age can write what it likes, making us good or bad, noble or mean, as the age pleases. The age can stunt, promote, or pervert pre-existent capacities, but it cannot create them. The worthy Robert Owen, who saw in external circumstances the great moulders of human character, was obliged to supplement his doctrine by making the man himself one of the circumstances. It is

as fatal as it is cowardly to blink facts because they are not to our taste. How many disorders, ghostly and bodily, are transmitted to us by inheritance? In our courts of law, whenever it is a question whether a crime has been committed under the influence of insanity, the best guidance the judge and jury can have is derived from the parental antecedents of the accused. If among these insanity be exhibited in any marked degree, the presumption in the prisoner's favour is enormously enhanced, because the experience of life has taught both judge and jury that insanity is frequently transmitted from parent to child. I met some years ago in a railway carriage the governor of one of our largest prisons. He was evidently an observant and reflective man, possessed of wide experience gathered in various parts of the world, and a thorough student of the duties of his vocation. He told me that the prisoners in his charge might be divided into three distinct classes. The first class consisted of persons who ought never to have been in prison. External accident, and not internal taint, had brought them within the grasp of the law, and what had happened to them might happen to most of us. They were essentially men of sound moral stamina, though wearing the prison garb. Then came the largest class, formed of individuals possessing no strong bias, moral or immoral, plastic to the touch of circumstances which would mould them into either good or evil members of society. Thirdly came a class—happily not a large one—whom no kindness could conciliate and no discipline tame. They were sent into this world labelled “incorrigible,” wickedness being stamped, as it were, upon their organisations. It was an unpleasant truth, but as a truth it ought to be faced. For such criminals the prison over which he ruled was certainly not the proper place. If confined at all, their prison should be on a desert island where the deadly contagium of their example could not taint the moral air. But the sea itself he was disposed to regard as a cheap and appropriate substitute for the island. It seemed to him evident that the State would benefit if prisoners of the first class were liberated; prisoners of the second class educated; and prisoners of the third class put commendously under water. It is not, however, from the observation of individuals that the argument against “free will,” as commonly understood, derives its principal force. It is, as already hinted, indefinitely strengthened when extended to the race. Most of you have been forced to listen to the outcries and denunciations which rung discordant through the land for some years after the publication of Mr. Darwin's “*Origin of Species*.” Well, the world—even the clerical world—has for the most part settled down in the belief that Mr. Darwin's book simply reflects the truth of nature; that we who are now “foremost in the files of time” have come to the front through almost endless stages of promotion from lower to higher forms of life. If any one of us were given the privilege of looking back through the eons across which life has crept towards its present outcome, his vision would ultimately reach a point when the progenitors of this assembly

could not be called human. From that humble society, through the interaction of its members and the storing up of their best qualities, a better one emerged; from this again a better still, until at length, by the integration of infinitesimals through ages of amelioration, we came to be what we are to-day. We of this generation had no conscious share in the production of this grand and beneficent result. Any and every generation which preceded us had just a little share. The favoured organisms whose garnered excellence constitutes our present store owed their advantage, first, to what we in our ignorance are obliged to call "accidental variation;" and, secondly, to a law of heredity in the passing of which our suffrages were not collected. With characteristic felicity and precision Mr. Matthew Arnold lifts this question into the free air of poetry, but not out of the atmosphere of truth, when he ascribes the process of amelioration to "a power not ourselves which makes for righteousness." If, then, our organisms, with all their tendencies and capacities, are given to us without our being consulted, and if, while capable of acting within certain limits in accordance with our wishes, we are not masters of the circumstances in which motives and wishes originate; if, finally, our motives and wishes determine our actions, in what sense can these actions be said to be the result of free will? Here again, we are confronted with the question of moral responsibility which it is desirable to meet in its rudest form and in the most uncompromising way. "If," says the robber, the ravisher, or the murderer, "I act because I must act, what right have you to hold me responsible for my deeds!" The reply is, "the right of society to protect itself against aggressive and injurious forces, whether they be bond or free, forces of nature or forces of man." "Then," retorts the criminal, "you punish me for what I cannot help." "Granted," says society, "but had you known that the treadmill or the gallows was certainly in store for you, you might have 'helped.' Let us reason the matter fully and frankly out. We entertain no malice or hatred against you, but simply with a view to our own safety and purification we are determined that you and such as you shall not enjoy liberty of evil action in our midst. You, who have behaved as a wild beast, we claim the right to cage or kill as we should a wild beast. The public safety is a matter of more importance than the very limited chance of your moral renovation, while the knowledge that you have been hanged by the neck may furnish to others about to do as you have done the precise motive which will hold them back. If your act be such as to invoke a minor penalty, then not only others, but yourself may profit by the punishment which we inflict. On the homely principle 'that a burnt child dreads the fire,' it will make you think twice before venturing on a repetition of your crime. Observe, finally, the consistency of our conduct. You offend because you cannot help offending, to the public detriment. We punish, because we cannot help punishing, for the public good. Practically, then, as Bishop Butler predicted, we act as the world acted when it supposed

the evil deeds of its criminals to be the products of free will.' "What," I have heard it argued, "is the use of preaching about duty if man's predetermined position in the moral world renders him incapable of profiting by advice?" Who knows that he is incapable? The preacher's last word enters as a factor into the man's conduct; and it may be a most important factor, unlocking moral energies which might otherwise remain imprisoned and unused. If the preacher feel that words of enlightenment, courage, and admonition enter into the list of forces employed by Nature for man's amelioration since she gifted man with speech, he will suffer no paralysis to fall upon his tongue. Dung the fig-tree hopefully, and not until its barrenness has been demonstrated beyond a doubt let the sentence go forth, "Cut it down, why cumbereth it the ground?" I remember when a youth in the town of Halifax, some 32 years ago, attending a lecture given by a young man to a small but select audience. The aspect of the lecturer was earnest and practical, and his voice soon rivetted attention. He spoke of duty, defining it as a debt owed, and there was a kindling vigour in his words which must have strengthened the sense of duty in the minds of those who heard him. No speculations regarding the freedom of the will could alter the fact that the words of that young man did me good. His name was George Dawson. He also spoke, if you will allow me to allude to it, of a social subject much discussed at the time, the Chartist subject of "levelling." "Suppose," he said, "two men to be equal at night, and that one rises at six, while the other sleeps till nine next morning, what becomes of your levelling?" And in so speaking he made himself the mouthpiece of Nature, which as we have seen, secures advance, not by the reduction of all to a common level, but by the encouragement and conservation of what is best. It may be urged that, in dealing as above with my hypothetical criminal, I am assuming a state of things brought about by the influence of religions which include the dogmas of theology and the belief in free will—a state namely, in which a moral majority control and keep in awe an immoral minority. 'The heart of man is "deceitful above all things, and desperately wicked." Withdraw, then, our theologic sanctions, including the belief in free will, and the condition of the race will be typified by the samples of individual wickedness which have been adduced. We shall all, that is, become robbers, and ravishers, and murderers. From much that has been written of late it would seem that this astounding inference finds house-room in many minds. Possibly, the people who hold such views might be able to illustrate them by individual instances.

"The fear of hell's a hangman's whip
To keep the wretch in order."

Remove the fear, and the wretch following his natural instinct may become disorderly; but I refuse to accept him as a sample of humanity. "Let us eat and drink, for to-morrow we die" is by no means the

ethical consequence of free thought. To many of you the name of George Jacob Holyoake is doubtless familiar, and you are probably aware that at no man in England has the term Atheist been more frequently pelted. There are, moreover, really few who have more completely liberated themselves from theological notions. Among working-class politicians Mr. Holyoake is a leader. Does he exhort his followers to "eat and drink, for to-morrow we die?" Not so. In the August number of the 19th Century you will find these words from his pen:—"The gospel of dirt is bad enough, but the gospel of mere material comfort is much worse." He contemptuously calls the Comtist championship of the working man "the championship of the trencher." He would place "the leanest liberty which brought with it the dignity and power of self help" higher than "any prospect of a full plate without it." Such is the doctrine taught by this "Atheistic" leader; and no Christian, I apprehend, need be ashamed of it. Not in the way assumed by our dogmatic teachers has the morality of human nature been propped up. The power which has moulded us thus far has worked with stern tools upon a very rigid stuff. What it has done cannot be so readily undone; and it has endowed us with moral constitutions which take pleasure in the noble, the beautiful, and the true, just as surely as it has endowed us with sentient organisms which find aloes bitter and sugar sweet. That power did not work with delusions. nor will it stay its hand when such are removed. Facts rather than dogmas have been its ministers—hunger and thirst, heat and cold, pleasure and pain, sympathy, shame, pride, love, hate, terror, awe—such were the forces the interaction and adjustment of which during the immeasurable ages of his development wove the triplex web of man's physical, intellectual, and moral nature, and such are the forces that will be effectual to the end. Some may retort that even on my own showing "the power which makes for righteousness" has dealt in delusions; for it cannot be denied that the beliefs of religion, including the dogmas of theology and the freedom of the will, have had some effect in moulding the moral world. Granted; but I do not think that this goes to the root of the matter. Are you quite sure that those beliefs and dogmas are primary and not derived—that they are not the products, instead of being the creators, of man's moral nature? I think it is in one of the "Latter Day Pamphlets" that Carlyle corrects a reasoner, who deduced the nobility of man from a belief in heaven, by telling him that he puts the cart before the horse, the real truth being that the belief in heaven is derived from the nobility of man. The bird's instinct to weave its nest is referred to by Emerson as typical of the force which built cathedrals, temples, and pyramids:—

"Knowest thou what wove yon woodbird's nest
Of leaves and feathers from her breast,
Or how the fish outbuilt its shell,
Painting with morn each annual cell?"

Such and so grew these holy piles
While love and terror laid the tiles ;
Earth proudly wears the Parthenon
As the best gem upon her zone ;
And Morning opes with haste her lids
To gaze upon the Pyramids ;
Oe'r England's abbeys bends the sky
As on its friends with kindred eye ;
For out of Thought's interior sphere
These wonders rose to upper air,
And nature gladly gave them place,
Adopted them unto her race,
And granted them an equal date
With Andes and with Ararat."

Surely many of the utterances which have been accepted as descriptions ought to be interpreted as aspirations ; or as having their roots in aspiration, instead of objective knowledge. Does the song of the herald angels, "Glory to God in the highest, and on earth peace, goodwill toward men," express the exaltation and the yearning of a human soul, or does it describe an optical and acoustical fact—a visible host and an audible song? If the former, the exaltation and the yearning are man's imperishable possession—a ferment long confined to individuals, but which may by and by become the leaven of the race. If the latter, then belief in the entire transaction is wrecked by non-fulfilment. Look to the East at the present moment as a comment on the promise of peace on earth and goodwill toward men. That promise is a dream dissolved by the experience of 18 centuries. But though the mechanical theory of a vocal heavenly multitude proves untenable, the immortal song and the feelings it expresses are still ours, to be incorporated, let us hope, in purer and less shadowy forms in the poetry, philosophy, and practice of the future. Thus, following the lead of physical science, we are brought from the solution of continuity into the presence of problems which usually classified, lie entirely outside the domain of physics. To these problems thoughtful and penetrative minds are now applying those methods of research which in physical science has proved their truth by their fruits. There is on all hands a growing repugnance to invoke the supernatural in accounting for the phenomena of human life. And the thoughtful minds just referred to, finding no trace of evidence in favour of any other origin are driven to seek in the interaction of social forces the genesis and development of man's moral nature. If they succeed in their search—and I think they are sure to succeed—social duty would be raised to a higher level of significance, and the deepening sense of social duty would, it is to be hoped, lessen, if not obliterate, the strife and heartburnings which now beset and disguise our social life. Towards this great end it behoves us one and all to work.

Mr. James Maclaren on the Use of Charts in Asylum Reports, on Unlocked Doors, and Over-Indulgence in Amusements and Æsthetics in Asylums.

Mr. James Maclaren has, in the Annual Report of the Stirling District Asylum for 1876, brought into use a novelty in such documents, viz., charts, for showing at a glance the monthly admission, discharges, and death-rate.

The following are extracts from his report on matters of interest :—

As regards the system of unlocked doors, if this is *bonâ fide*, if patients can come and go as they please, and if no extra supervision to counterbalance the nominal freedom is used, then the natural and logical termination of the system would be the abolishing of asylums altogether, and the treatment of all cases at their own homes. At any rate, the very persons whom the public would most wish to see in safe keeping, would be those who would take advantage of the open doors, and the remaining patients would be so harmless or helpless that they might be perfectly well treated outside the walls of an asylum. If, however, this supposed freedom is but a name, and if increased supervision is substituted for mechanical obstruction, then the issue, after all, comes to be a very narrow one, and merely a matter of choice between one of two methods.

Few, I think, can doubt that the common-sense view of the matter is that persons of unsound mind, whose powers of self-control are weakened or altogether gone, and who are dangerous to themselves and others, are in an enormous number of cases safer under lock and key. If these are abolished, and watching by attendants substituted, the work must be inexpressibly irksome, trying, and harassing, and it must be thoroughly bad for the peace of an asylum that the patients should have the feeling that their detention is due to the direct individual action of the attendants. That an asylum can be conducted with unlocked doors, in the true and broad sense of the term, and that this can be done with benefit to the patients (among whom are epileptics, homicides, and would-be suicides), and with safety to the community outside its walls, it is difficult to believe. A certain amount of freedom cautiously given in suitable cases undoubtedly contributes greatly to an already advancing cure, or lightens the lot of those not likely ever again to take their former places in the outside world. To do more than this with such terribly dangerous elements as we have to deal with seems to be needlessly courting disaster.

The question may here be advanced whether there is not a risk of a somewhat enervating atmosphere being produced in our pauper asylums by the too great prominence given to amusements, and by the surrounding of pauper patients with styles of decoration and articles of furniture and ornament beyond what they have been

accustomed to. That it would be gross cruelty, unworthy of the days we live in, to refuse to the majority of our suffering patients anything in moderation that would lighten their lot, no one would dream of denying. I cannot but think, nevertheless, that there are cases, especially those of moral insanity and ones characterised by an amount of wanton indulgence in their vagaries, in which a slight taste of some of the discomforts which, outside, would inevitably follow the breaking of human or natural laws, does substantial good. I have observed many insane persons of the types I have mentioned capable of exercising great self-control when they were made conscious that their pleasure, if not their comforts, would be curtailed in the event of their indulging in forbidden ways. As at present treated, however, they, in most instances, lose the bracing and healthy effects of adversity, and often do not suffer in the slightest from the consequences of their own acts, even when these are vicious and wanton. Such a state of matters would be admittedly utterly bad for any one in the general community, and it surely cannot be good for the many within our walls who have not gone far beyond the boundary that separates them from their sane brethren.

It is not a very rare occurrence to find patients sorry to leave and almost glad to remain in or return to an asylum, where they have experienced nothing but what was more agreeable and luxurious than they had previously been accustomed to. At first sight, an instance of this seems only creditable and pleasant to all concerned, but a deeper view would, I think, convince most people that the feeling is, at bottom, an entirely bad one for the patient, and that it would be better for him, and more tonic for his powers of self-control, were he to feel the necessity of calling these into play to keep himself at large in the outside world.

PART II.—REVIEWS.

Leçons sur l'Histologie du Système Nerveux. Par L. RANVIER, Professeur d'Anatomie générale au Collège de France, etc. Paris, 1878.

A course of lessons or lectures on the histology of the nervous system by one who is generally, and as we believe justly, regarded as occupying the very foremost rank among the anatomists of the day, cannot but be of interest to all engaged in the practice of scientific medicine, and to none more than to those who by histological inquiry or by clinical research are specially concerned with the study of nervous structure and phenomena. And it may be at once said that not only on account of the nature

of the subjects treated of in these lectures, but also for the manner in which they are discussed and set forth, will the volumes before us well repay careful perusal and study. The separate histological questions considered are indeed not numerous, but this is owing to the care and minuteness with which each in succession is discussed; minuteness coupled with a lucidity of exposition which is rare as it is admirable. It seems to us, indeed, in reading these lectures that we are actually in the presence of the teacher, that we hear his words and witness his demonstrations. Each point, as it is introduced, is taken up in a way which cannot fail to attract attention. The labours of other histologists in the field under discussion are given, their methods of research described, their opinions and conclusions passed in review. And then the subject is grappled with afresh; the processes recommended as best adapted to display histological structure are minutely described, the results examined, compared with each other, and delineated; the effects of experiments are adduced, physiological facts appealed to; and, finally, the conclusions arrived at are clearly enunciated. And if, by an occasional remark, we are reminded that the lecturer is addressing students of histology rather than matured histologists, and bestows hardly sufficient weight on the opinions of others when these happen to clash with his own, yet it must be added that doubts, when they occur, are freely expressed, and any want of definite knowledge fully admitted.

Coming to the more special consideration of the text, we observe that the author devotes the first sixteen lectures to the demonstration and description of nerve fibres, including the medullated (*nerfs à myéline*) and the non-medullated (*fibres de Remak*); the fibrous connective tissue and the vessels of nerves coming in for special study. The clearness of M. Ranvier's teaching, before remarked, is specially noticeable here. It is such that, given very ordinary materials, but given occasionally also it should be said for this country a "vivisection license," the student may readily investigate for himself the statements advanced by Professor Ranvier. In regard to the medullated fibres the description is most close and exhaustive, especially that relating to the *annular constrictions* (*étranglements annulaires*), and the *incisions of Schmidt*. According to the author the constrictions of the nerve tubes serve to prevent displacement of the myeline of the tubes, and are also the channels through which the

nutritive plasma gains access to the axis cylinders. We must express some surprise, by the way, at the statement made (p. 51) to the effect that all histologists have followed Henle, and fallen into his error in considering that the axis cylinder does not exist as such except as the result of *post-mortem* changes. In this country, at least, several of our most competent observers agree with M. Ranvier in holding a contrary opinion. Remak's fibres, the author holds, constitute a special system of fibres destined mainly, though not entirely, for the supply of the organic system, and he contests the theory which has found acceptance with some that they are to be considered as imperfectly developed medullated fibres.

In the examination of the nerve tissues M. Ranvier recommends specially the employment of osmic acid in one *per cent.* solution, both for hardening and also as a medium in which to dissect nerve tubules for examination in the fresh state. As staining fluid he brings into use *picro-carminate, carmine, nitrate of silver, and logwood. Careful directions are given for the employment of all these re-agents, those for logwood, a valuable but troublesome substance, being thus stated: "In a solution of alum of 1 to 200, pour drop by drop a strong solution of crystalline hæmatoxyline in absolute alcohol. The liquid assumes a pale violet hue at first, which gradually deepens at the same time that a precipitate is deposited. In a few days the liquid becomes deep violet and is then fit for use, its staining as well as its selective properties being at their *maximum*."

The observations of Professor Ranvier on the microscopic appearances of the *living* nerve fibre will be read with interest, and coming from so high an authority may, we venture to think, satisfy the objections and scruples of those who see in all re-agents as applied to the study of animal tissues a fatal source of fallacy and error. In the lung of the *living* frog, by means of the apparatus of Holmgren, M. Ranvier demonstrates in the nerve fibres traversing the organ, the axis cylinders, the annular constrictions, and the incisions of Schmidt, just as he has done after the application of osmic acid in the case of the nerve fibril removed from the animal. On this head we regard M. Ranvier's summing up as having an importance and a significance not easy to over-estimate. He concludes in these terms—"Being

* Picro-carminate of ammonia—A substance formed by adding a solution of carmine in ammonia to a saturated solution of Picric acid and evaporating. M. Ranvier recommends a solution of one *per cent.* for staining.

thus able to distinguish in the living nerve all those conditions previously demonstrated by means of re-agents, we are warranted in concluding that our re-agents are good, and that the results obtained by their means are reliable."

The important subjects of the degeneration and renewal of nerves after section in the living animal are next treated of at length. The degenerative changes which take place in the peripheral end of the nerve so cut are considered by M. Ranvier to be the following: There first occurs a transverse segmentation of the myeline (white substance of Schwann) of the fibres, and conversion of that substance into globular masses. This change is associated with fatty degeneration of all the protoplasmic elements of the nerve bundles. The axis cylinders of the fibres next break up at intervals, and finally disappear. When the regenerative process commences nothing but the external sheaths of the nerve tubes containing fatty cells and granules and occasional small masses of protoplasm remain, and this transformation is found to extend along the entire *peripheral* portion of the cut nerve. In the *central* end of the nerve the principal change which occurs has reference to the axis cylinders, which become hypertrophied and markedly striated. These alterations form the starting point of the regenerative process, new axis cylinders being formed by longitudinal segmentation of the original rods, and each new axis cylinder serving as the origin of another nerve tube. It is by the growth of these nerve tubes of new formation in the *central* segment of the cut nerve, and their penetration into the peripheral portion, that continuity and regeneration of the nerve is brought about.

We cannot here do more than mention the two remaining subjects treated of by M. Ranvier in the present volumes. These subjects comprise a description of the nervous arrangement in the electrical organ of the *Torpedo* with special reference to the mode of termination of the nerve fibres therein; and, finally, a most exhaustive inquiry into the termination of nerves in striated muscular fibre, in which the author passes in review the numerous opinions which have been held on this important question, and demonstrates the result of the most recent researches in respect to it.

A large number of highly illustrative plates greatly enhance the value of the work, and as to each there is attached a full explanation, a very small knowledge of French will enable any one, if a little practised in histological research, to grasp

the leading facts presented by the author. But the method of study inculcated by M. Ranvier, the careful investigation, the cautious deduction, the philosophic reasoning, can only be appreciated by a close study of the lessons themselves, and this we venture earnestly to recommend to those engaged in anatomical or pathological research.

Modern Philosophy, from Descartes to Schopenhauer and Hartmann. By FRANCIS BOWEN, A.M., Alford Professor of Natural Religion and Moral Philosophy in Harvard College. London: Sampson Low, Marston and Co.

A glance through the pages of this volume is enough to show that it is not what, by its title, it purports to be, namely, a treatise on Modern Philosophy, from Descartes downwards to Schopenhauer. It contains a very full account of Kant's philosophy, and goes into great length in describing the two latest German outcomes of modern thought, those of Hartmann and Schopenhauer; but it has not a word to say of Hume, and leaves out of consideration altogether the origin and increase of that current of philosophical thought which has been growing stronger and stronger, until it now almost carries everything before it. No one would obtain from Mr. Bowen's book the least notion of the true filiation of modern philosophy; when he says, therefore, that he has endeavoured to present a full analysis and criticism of the systems only of those great thinkers whose writings have permanently influenced the course of European thought, we are disposed to think that he has mistaken what has permanently influenced his own thought for a permanent influence upon European thought—two very different things. Mr. Bowen's philosophical ideas are by no means the measure of European thought. It would be sad if they were, for they seem to have been singularly unprogressive: nearly forty years of diligent inquiry and reflection, he tells us, "having served only to enlarge and confirm the convictions with which I began, and which are inculcated in this book." If a man, at the end of a period of forty years, thinks just what he did at the beginning of it, we should be apt to think it was high time for him to retire from the teaching of philosophy to University students.

This just criticism made, we gladly testify to the interesting and instructive way in which Mr. Bowen has done the

work which he set himself to do. His style is clear and lively, and he has succeeded in making abstruse and obscure matters intelligible, without seriously sacrificing their meaning, so far as we can judge. His strong feelings give a refreshing piquancy to his expositions, for he does not confine himself to mere commentary ; on the contrary, he avows and defends the doctrine which he believes to be just and true, and, having fully studied most of what the philosophy of these modern times and the science of our own day “assume to teach,” is “more fully convinced than ever that what has been justly called ‘the dirt philosophy’ of Materialism and Fatalism is baseless and false.” Being a “Professor of Natural Religion,” he makes his confession of faith in these words—“I accept, with unhesitating conviction and belief, the doctrine of the Being of one Personal God, the Creator and Governor of the world, and of one Lord Jesus Christ, in whom ‘dwelleth all the fulness of the Godhead bodily.’” The late Mr. Grote was so strongly persuaded of the mischief which was done to moral philosophy by infecting it with religious dogma, that he left an endowment to the Chair of Moral Philosophy in University College, London, on the condition that the Professor should not be a minister of any religion. As a professor of natural religion, not of revealed religion, Mr. Bowen perhaps would not be excluded by the terms of Mr. Grote’s legacy ; but we think that the needless way in which he has mixed up his religious feelings and opinions with discussions which might well have been purely philosophical, is a strong illustration of the danger and the mischief which it was Mr. Grote’s wish to guard against.

The following sentence may serve to illustrate the sort of remarks which make Mr. Bowen’s book more lively reading than books on philosophy usually are :—“Through Coleridge, who knew enough of Schelling to pilfer some of his thoughts, though not enough to understand him, as a whole, these influences were imported, so to speak, into English literature.”

Lectures on Diseases of the Nervous System. Delivered at Guy’s Hospital. By SAMUEL WILKS, M.D., F.R.S. J. and A. Churchill, 1878.

This book is a re-publication of lectures delivered ten years ago, and published in a medical journal, with the additional matter which has been accumulated during those years. It is divided into four parts : Part I. dealing with the brain and

its diseases—Paralysis, Aphasia, Apoplexy, Inflammation, Thrombosis, Abscess, Tumour, Aneurism, General Paralysis of the Insane, Delirium Tremens. Part II. dealing with the Spinal Cord and its diseases—Paraplegia, Inflammation, Apoplexy, Tumours, and varieties of Paralysis, *e.g.*, Alcoholic, Syphilitic, Reflex, Choreal, Plumbic, Mercurial, &c. Part III. devoted to Functional and General Nervous Diseases—Epilepsy, Mania, Chorea, Tetanus, Hysteria, Hydrophobia, and the like; and Part IV. treating of Affections of Nerves. This indication of the contents affords the promise of a rich and varied banquet, and the reader who peruses these interesting lectures will have no reason to complain that the promise has not been fulfilled. Like all that Dr. Wilks writes, they are interesting and instructive, and to one who has made a systematic study of the diseases treated of, they cannot fail to be suggestive, but it may be doubted, perhaps, whether they are sufficiently systematic in method and precise in execution to give the student as full and exact an account as might be desired of what is known at present concerning each disease. However, this is partly the fault of our existing nomenclature, which Dr. Wilks thinks is such that it is impossible with it “to frame a systematic view of nervous diseases on any rational basis whatever, be it anatomical, pathological, or clinical.” If they have not the advantage of being thorough and systematic, they have the charms attaching to the style of a writer who, so to speak, “thinks aloud” on each suggestion as it occurs to him, and—we may truly add—often comes to no conclusion. They have this further merit—that they are fitted to arouse the attention of a reader who may have his mind filled with the cut-and-dry descriptions of diseases that are found in systematic treatises to the relations of symptoms of different diseases which he might probably overlook.

But while we are discussing their merits, we have a real fault to point out; and it is that they fail sometimes to give us the positive information which they should do respecting a disease—that they are not complete. If the reader’s experience agrees with ours, he will lay down the book after the perusal of a lecture with a sense of gratification, but when he begins to think about the disease of which he has read, and to enquire about some definite point, and thereupon refers to the book for information, he will sometimes experience disappointment. If, for example, attracted by the headings—Trance, Catalepsy, Ecstasy, the reader refers to Dr.

Wilks' remarks on these abnormal states, with a strong desire to learn what is known about them, he will discover that he must go elsewhere if he would have the foundations of knowledge from which to appreciate the little that Dr. Wilks has to say concerning them in his discursive way. As clinical lectures, however, on certain nervous diseases, to students who had already attended a complete systematic course, these lectures could not fail to be of the greatest value.

After a slight sketch of the anatomy and physiology of the brain—about which, by the way, most readers will ask, is it not far too brief for those who don't know it already, and unnecessary for those who do?—he treats of hemiplegia, giving one case where it was caused by disease in the cineritious substance of the convolutions, and others where it resulted from effusions of blood over the convolutions. He speaks of “hysterical” hemiplegia and hemianæsthesia, and of their cure by moral means. We confess that, in our opinion, Dr. Wilks throws no light whatever on those most obscure and interesting diseases. The late Professor Laycock adopted a far more scientific and satisfactory way of dealing with this obscure branch of nervous disease. How are they “hysterical?” What relation has it to the uterine functions? What is the nature of the paralysis and anæsthesia considered in relation to the brain-functions of motion and sensibility, and the brain elements on which these depend? Do they consist of a “reflex” alteration in the dynamical condition of those elements? What are their relations to mesmeric suspensions of motions and feelings? The chapter on aphasia is good, and the speculations of the author on the relation of language to thought most interesting, as coming from a man who combines, in a high degree, the instincts, knowledge and training, of a physiologist, physician and psychologist. But our readers already know Dr. Wilks' views on aphasia from his articles in this Journal. When aphasics swear, he agrees with Dr. Jackson that it merely shows a state of feeling, not a process of thought, and this leads him into an entertaining disquisition on the psychology of swearing. “A man who swears much shows an exuberant amount of sentiment, but detracts so much from the real force of his language.” The value of swearing as a safety-valve to the feelings, and a substitute for aggressive muscular action, in accordance with the well-known law of the transmutation of forces, is

not sufficiently dwelt on. Thus the reflex effect of treading on a man's corn may either be an oath or a blow, seldom both together. The Scotch minister's man had mastered this bit of brain physiology, when he whispered to his master, who was in great distress at things going wrong, "Wad no an aith relieve ye?" On the same principle it is that the insane are much given to relieving their morbidly exalted emotional state by oaths. The physiological aspect of profane swearing is altogether more comforting than the theological one. It is one of the things, too, where the legal and medical views come into collision, no doubt through the unscientific basis of the former. He thus explains the cases of pious old men "adopting the most horrible expressions." "This simply means that the intellectual part of the nervous system has gone, while some of the emotional remains."

The author, in speaking of the treatment of apoplexy, energetically combats the change of type theory of disease. We regard his chapter on cerebritis, &c., as being one of the most unsatisfactory in the book. The reader gets no idea of the real significance of the terms softening, sclerosis, inflammation, necrosis, and progressive tissue degeneration of the brain substance. The difference between the different kinds of true softenings and sclerosis is scarcely alluded to. He points out that morbid processes run along the nerves and the nerve-tracts in the brain "in the direction of their physiological action," but does not give Laycock the credit of having first formulated this most important law. Like all preceding authors, he utterly fails to make out a true general cerebritis. The subject of tumours of the brain is gone into shortly. The chapter on general paralysis may, perhaps, be considered fairly good, as addressed to students, but bears none of the marks of a thorough acquaintance with this disease. He regards it as a chronic inflammation. No doubt it is so, but the pathological process must be of quite a special nature, or why don't some cases recover? No other chronic inflammation of any other organ in the body is absolutely certain to be progressive, and to kill in a definite time. He heads one case as "General Paralysis with Dementia." We utterly protest against this being a right way of looking at the disease. No case of general paralysis was ever seen without dementia. The chapter on the diseases of the spinal cord we like better than those in regard to brain diseases. He regards "reflex paralysis" as by no means proved. Infantile paralysis he attributes to disease of the spinal cord,

“either in a limited spot where only one limb is affected, or in a larger area where several limbs are involved.” We think this is far too sweeping a generalisation. We believe that very many cases of infantile paralysis are due to small apoplexies in the motor centres of the brain, and that the subsequent degenerations found in the cord are due to the disease running along the nerve-fibres “in the direction of their physiological action.” Infantile paralysis has yet to be studied in the light of recent discoveries in brain physiology. In his chapter on Epilepsy, he neither adopts Dr. Russell Reynolds’ definition, nor the far more comprehensive and scientific conceptions in regard to “Epilepsies,” of Dr. Hughlings Jackson. He talks of “epilepsy” being “often an accompaniment of the general paralysis of the insane.” Now, general paralysis we regard as a disease, a pathological entity of the most distinct kind, and it could only confuse the minds of students to whom it was addressed, to speak of “epilepsy” in the sense of another distinct disease being present along with it. We might as well talk of paralysis being an accompaniment of rheumatism, because the patient can’t move his limbs. He inclines to the theory that “epilepsy is due to a sudden contraction of the small blood-vessels, depriving for a moment the brain of its blood.” We are utterly unable to comprehend the meaning of the following sentence :—“The conclusion, however, which must be arrived at is, that epilepsy is not a disease in the strict sense of the word, and that the symptoms must be regarded as physiological phenomena rather than pathological.”

After treating of unilateral and syphilitic epilepsy, he refers shortly to “Syphilitic Mania or Insanity,” but is not very clear as to its causes, symptomatology, or as to the nature of the arteritis in those cases. We consider the chapter on Hysteria the best in the whole book. In it the very best qualities of the author’s mind come out, and the style is most vigorous and eloquent, but it is not scientific in any strict sense. It is most practical, but we find therein no attempt to apply the most recent doctrines as to the physiology of the brain to the elucidation of this Protean disease.

The chapter on Sympathetic Diseases reads like a novel. The poets are largely drawn on for illustrations. The psychology of this chapter is admirable. Nothing can be better, too, than the chapter on Hypochondriasis. We cannot say the same of the few remarks on Melancholia, Sympathetic

Mania, and Mania after Acute Disease; but then any satisfactory account of these interesting affections would have taken up a much greater space and time than was at the author's disposal.

Fat and Blood, and How to Make Them. By S. WEIR MITCHELL, M.D., &c. Wippencott and Co., Philadelphia.

This little book is devoted to an account of Dr. Mitchell's methods of "renewing the vitality of feeble people by a combination of entire rest and of excessive feeding, made possible by passive exercise, obtained through the steady use of massage and electricity." The results he has obtained are truly surprising. To put on fat and flesh to thin, delicate, anæmic, nervous women, who had defied all other treatment, by the stone, rather than by the pound, by keeping them in bed, seems strange enough. "Massage" is thus applied: "The manipulator gently, but firmly, pinches up the skin, rolling it lightly between his fingers, and going carefully over the whole foot; then the toes are bent and turned about in every direction, and next, with the thumb and fingers, the little muscles of the foot are kneaded and pinched more largely, and the interosseous groups worked at with the finger tips, between the bones. At last the whole tissues of the foot are seized with both hands, and somewhat firmly rolled about. Next the ankles are dealt with in like fashion." In fact, this process is applied to every part of the body in succession, except the face. It depends very much on the strength, endurance, and practice of the manipulator how much good is done by these manœuvres. "The daily massage is kept up through, at least, six weeks." Such is the fashionable treatment for nervous and incurably thin people at present in America, and, we believe also, in some parts of Germany. Its results are said to be most striking. The temperature rises, the muscles get firm, the skin gets moist, the veins fill with blood, fat is laid on fast, and mental comfort and a sense of well-being takes the place of apathy and lassitude. If we can't get them to adopt the more physiological, and to most persons more pleasant method of long walks in the open-air, it will be well to try "Massage." We strongly recommend it for certain melancholics with trophic and vaso-motor affections, and also where dementia is threatened after an attack of excitement.

The First Annual Report of the Committee for Clapton and Darenth Asylum for Imbecile Children, to 31st December, 1875.

The Second Annual Report, &c., to 31st December, 1876.

The Reports of the Clapton Asylum detail the progress of the most decided improvement which has been effected in the treatment of lunacy since the date of Conolly. In 1873 about a hundred imbecile children were taken from Leavesden and sent to Hampstead, "in order," to use the words of the Managing Committee, "that an attempt might be made to impart to them an amount of training and education, which might, in many instances, fit them ultimately to go out into the world and earn their own livelihood, and which, in any case, could scarcely fail to ameliorate their unfortunate condition, and, at least, induce in them habits of cleanliness and order." In 1875 the large building and grounds at Clapton, formerly used as the London Orphan Asylum, was rented for the reception of the pauper idiot children of London. The Asylum was opened on the 28th of April, 1875; 277 patients were transferred from Hampstead; 360 in all were admitted during the year 1875, 202 being males, and 158 females. On the 31st of December, 1875, there were 300 in the Asylum. During the year 1876 the total number under treatment was 420; and at the end of the year there were in the Asylum 331 patients. These were all children under sixteen, save 25 adult women imbeciles, or harmless lunatics, to help to do the work of the house, and diminish the expense of hired servants.

The work at Clapton is carried on under circumstances very favourable to medical experiment and scientific research. All cases of idiocy are admitted, and that without any delay, and are kept in as long as they seem to require education. The restriction of age, by which pupils above sixteen were sent away to Leavesden or Caterham, is going to be abolished when the Asylum is transferred to Darenth, in Kent, where an extensive building on the separate block system is being erected. Many of the cases at Clapton are very helpless, some of the idiots have never walked nor put a foot to the ground; others are amenable to education in a greater or less degree.

From the schoolmistress's report, 270 children out of 331 were at school, though many of them, no doubt, could make little progress. The teaching commences with very elemen-

tary exercises, such as lessons in form and colour, up to reading and arithmetic. The older boys are taught shoemaking, tailoring, and carpentering ; and the girls, sewing, knitting, and household work. "In addition to the repairing, we are told that all the clothing and boots required for use are now made in the Asylum."

The Medical Superintendent, Dr. Fletcher Beach, has found that the number of fits, in his cases of epileptic idiocy, has been reduced by treatment, and he has had a few cures where the disease has probably been of short duration. "Five cases," he writes, "have so much improved, that early this year they will be discharged 'recovered.' A plan is in contemplation for following them up after they leave the Asylum, in order to see whether the improvement they have made here continues when they mix with the outer world.

"It may be said that five is a small number to send out 'recovered,' but it must be borne in mind that the time during which the Asylum has been in operation is so short, that little could have been done with sane children ; much more, then, does this hold good with imbeciles. The greatest progress is made among the younger children, whose brains appear to respond more quickly to the influences brought to bear upon them, while bad habits can be more speedily eradicated ; among these we may look for most recoveries. There are, however, a large number of children in the Asylum who may be improved so far as to be able, when sent home, to do some work about the house, and thus indirectly contribute towards their support. Many of a class lower than this, will have learnt some employment here, and when sent to the adult asylums will not be a dead weight, but will at once be able to do something in return for their maintenance." We may also hope that the attentive study of the symptoms and pathology of idiocy will advance our knowledge of the nervous system, and help us better to understand the more complicated derangements met with in insanity.

PART III.—PSYCHOLOGICAL RETROSPECT.

1. *German Retrospect.*

By W. W. IRELAND.

(Continued from January No., 1878, vol. xxiii., p. 611.)

Arterial Disease in Insanity.—Dr. Ludwig Meyer (“Archiv., vi. Band, 1 Heft”) has for five years been making observations on the aneurismal alterations of the internal carotid of the insane. He gives cases where arterial degenerations following chronic endoarteritis were observed. Hardening and calcareous degeneration of the arterial wall are very common. They are observed in the form of a ring encircling the artery for a length of eight millimètres to one centimètre, metres commencing and ending abruptly. Often indications of disease were found in the other arteries.

Thinning of the walls of the internal carotid was also observed, a condition obviously favouring aneurism or dilatation. In eight cases an aneurismal condition of the carotid was observed, dilatation commencing immediately above the separation of the carotid from the common trunk. This dilatation in its turn becomes a cause of retardation of the circulation of blood in the brain. It is not easy to diagnose it during life, though Dr. Meyer states that it is occasionally accompanied by a systolic murmur near the larynx, rather of a rushing than of a blowing character.

Dr. Laufenauer, of Vienna, gives a case (“Centralblatt,” Nr. 10, 1876) where insanity is combined with aneurism of the common carotid.

Dr. Schäfer (“Zeitschrift,” xxxiv Band, 4 Heft) pursues the subject of the dilatation of the internal carotid in the insane. In addition to the observations of Meyer he cites those of Dr. Manson Patrik, who found a dilatation of the artery at its origin from the common trunk in twelve out of seventeen bodies of the insane examined by him, and in five out of six paralytics.

From a consideration of the development and anatomy of the artery he thinks this part naturally disposed to abnormal enlargement. A hyperplastic process is very common, which might readily take a morbid action and pass into atheromatous degeneration. By carefully measuring the girths and diameter of the internal carotid artery in the sane and insane he found the average size much the same, rather more in the sane than the insane.

Dr. Schäfer observes that the internal carotid artery in the left side is normally bigger than the right, owing probably to the greater activity of the left hemisphere.

Remedies for Epilepsy.—Dr. Erlenmeyer, in the “Correspondenz Blatt,” collects a number of testimonies from different German physicians to the benefits derived from the treatment of epilepsy in asylums and institutions for idiots.

Dr. Bertelsmann, physician to the Institution for Epileptics at Bielefeld, remarks that though he does not believe bromide of potassium to be a specific against epilepsy, he is persuaded that it occasionally effects a cure. At the same time he quotes the opinion of Dr. Auguste Voisin that though oxide of zinc acts more slowly than the bromide of potassium its effects are more certain; and after having used both these two medicines for more than twenty years he habitually gives the preference to the oxide of zinc used after the method of Herpin of Geneva. Dr. Erlenmeyer has tried bromide of lithium, which was recommended by Dr. Levi, of Paris, as more efficacious than the bromide of potassium, and as having no action upon the heart.

From his own experiments he is disposed to believe that it is inferior to bromide of potassium as a remedy against epilepsy. He has also tried bromide of quinine, and found it had a more hypnotic action than bromide of potassium; he finds it useful in treating periodic fits of insanity and hypochondria, but is not inclined on the whole to give it the preference to the more commonly used drug.

On the Odour of the Insane.—Laehr (“Zeitschrift,” xxxiv. Band, 3 Heft) treats of the perspiration of the insane. He says that formerly it was believed that a peculiar smell came from the skin of the insane, but that owing to the greater attention paid to cleanliness this odour is no longer met with. This is held by some physicians of experience in Great Britain, Dr. Blandford, for example; while others persist that there is an odour peculiar to the insane which is not met with in ordinary hospitals for the sick, however dirty they may be.

Dr. Laehr gives several cases which confirm the view he somewhat inconsistently treats as obsolete.

There was a doctor at Halle afflicted with insanity, accompanied by delusions, during which he emitted from the skin a very penetrating odour, which he thought particularly pleasant, though no one else was of that opinion.

Dr. Laehr gives several other instances where puerperal mania, or mania accompanied by disorders of menstruation was attended with a peculiar smell from the skin. Two cases are given of circular insanity, where the period of disquiet was attended by an exhalation from the skin having a characteristic smell.

Dr. Laehr believes that in these instances the secretion of sweat was greater than usual, and that the peculiar exhalation must have been due to a special action of the nerves upon the sudoriparous glands.

2. *French Retrospect.*

By J. G. McDOWALL, M.B.

*Annales Médico-Psychologiques, for 1876 and part of 1877.**Les Aliénés Persécuteurs.*

Under this title, Dr. Taguet describes a class of patients with delusions of an exalted character associated, however, with and dominated by those of persecution. He shows that while at liberty these people may chiefly be found haunting the courts of law, or carrying their grievances to various public officials; while eventually they commit some act which renders it necessary that they be confined in an asylum. Five cases are detailed at length, and the following may be selected as typical:—

M. C., ætat. 40, believed herself loved by a young and handsome stranger residing in an hotel, opposite the house in which she acted as cashier. On the departure of the stranger she accused her employer of having prejudiced her lover against her, and pursued him for damages. Foiled in all her attempts, at the end of two years she again decides to marry, but is again deceived. She now makes repeated efforts to obtain judgment against her employer, but is placed in an asylum before attaining her end. Liberated, she renews her attempts, but is soon again deprived of her liberty.

On the Influence of Coloured Light in the Treatment of Insanity.

Treatment by coloured light has been, in the hands of Dr. Ponza, very successful. He has been at pains to render the light in each coloured room as intense as possible, by carefully selecting the glass and tinting the walls a similar colour.

After three hours residence in a room painted red, and having red glass in the windows, a melancholic, who had refused his food, was found gay and smiling, and asked for food.

In another case, a melancholic with delusions, having spent a day in the red room, became active and cheerful, and soon recovered.

A patient suffering great excitement, was placed in a blue room, and in less than an hour became much quieter, while another having spent a day in a violet room, declared himself well, and was soon discharged.

It has been ascertained that the violet rays are the most powerfully electro-chemical; that the red light is rich in calorific rays, while the blue is devoid of both properties. In conclusion, treatment by coloured light is suggested in cases of chorea, hysteria, epilepsy, and puerperal convulsions, and its value in apparently hopeless cases of insanity insisted on.

We believe that the results obtained in this country are far from encouraging.

On Diseases of the Skin in the Insane.

This paper is divided into five chapters. The first is historical, and shows that, while many authors have noted the frequency of diseases of the skin in the insane, the subject has never been thoroughly investigated. The second gives, at great length, a description of the various forms of skin disease. There may be changes in the colour or thickness of the skin, it may be abnormally smooth or rough, congested or unusually transparent, and may present pigmentations, ecchymoses, or any of the ordinary forms of eruption. *Cutis anserina* may become a permanent condition, and in some cases the elevations become enlarged and coloured. Dr. Fèvre objects to the term *cutis anserina*, employing that of "*chair depoule*." Pellagroid affections are common, especially during spring and summer, and are attributable to exposure to the sun. They are found on all parts exposed to the sun, but chiefly on the back of the hands. The skin assumes an earthy colour, becomes wrinkled and fissured, in some parts thick, in others thin and glistening. The epidermis is broken up into scales, attached by their centres with edges curled up, in some parts forming little heaps, beneath which the skin is red, with slight serous oozing. These pellagroid affections must be distinguished from pellagrous affections. By "*peau ansérine*," Dr. Fèvre would describe a disease he has observed in persons suffering from great debility. Here the skin, without exposure to the sun, becomes dry and tawny, like rumpled parchment, and neither inflammation nor exfoliation are observed.

The physiological functions of the skin are often disturbed, and perversions of sensibility as regards touch, heat and pain, are very common, and vary much in degree and extent. The determined attempts of some patients to mutilate themselves, appear to be due to an intolerable sensation of itching in a part which has lost its sensibility to pain, and many delusions originate, probably, in the various forms of altered sensibility.

The secretions of both skin and mucous membranes are frequently altered in various ways, notably the sweat as regards smell.

The third chapter is entitled, "*Evolution and Progress of Diseases of the Skin in Insanity; their relations to that Malady*."—As a rule affections of the skin succeed the nervous lesions. They often change from one form to another, following the various phases of mental disease, and, like these mental states, may improve, remain stationary, or become worse. By observation it is possible to assign to each form of mental disease a corresponding form of skin affection. This is not an absolute law, but it has often been noted that in some forms of insanity, herpes, furunculæ, and pemphigus are found, while in others, eczema, lichen or psoriasis is more common. The nature and progress of cutaneous changes in the insane may serve as data in forming the diagnosis and prognosis of the mental affection. The terminal extremities of the sensitive fibres, the papillæ and the corpuscles of

Meissner are probably altered, but their condition has not been demonstrated. Softening of the white substance of the cord has been found in some cases.

Chap. IV. *Etiology*.—By many, the origin of the various cutaneous affections observed in the insane, is ascribed to poverty, improper hygienic conditions, and insufficient food. Climate, season, sex and age, have each some influence, but the real cause is the mental disease. The numerous lesions of the skin in the insane are only external manifestations of a pathological state, of which the origin is in the nervous system.

Chap. V. *Treatment*.—This must be local and general. Baths of various kinds are valuable. Alkalies and sulphur are over-valued, and often give rise to further irritation. In furunculus and allied affections, ointment of calomel is of value, while collodion is useful where the skin is fissured or eroded; but it must not be used over extensive surfaces. Cold water, alkaline and other lotions promote comfort and cleanliness, but are not curative. Lotions of chlorate of potash in ecthyma, and of chloral in atonic impetigo and eczema are useful. If the affection cover a large surface, rest in bed should be maintained. Iron and arsenic internally are often valuable, but are over-praised.

In the general treatment, attention should be directed to the conditions of the physiological functions of the skin. Should secretion be excessive, the kidneys, lungs, and intestines must be acted on; should it be diminished, sudorifics and stimulants of the skin must be employed. Tonics, stimulants, and a generous diet must be supplied. The diet should be varied, and should include fresh fruit and vegetables. Lastly, overcrowding must be avoided, and exercise insisted on.

Tuberculosis in the Insane.

For some years past, to tubercular disease has been due from one-fifth to one-fourth of the mortality at the asylum of Auxerre. Chronic pulmonary phthisis has been the most common form; occasional cases of entero-mesenteric disease have occurred, but the brain and its membranes have never been affected. The patients most liable to these affections are dements and melancholics with stupor, then idiots, and lastly the maniacal. The forms of insanity associated with depression, carry with them conditions which, of themselves, are capable of giving rise to tubercular disease. The nutritive function is altered and diminished, suffering with the others from the asthenia and anæsthesia of the whole nervous system, the nearly total absence of reaction. The period of residence in the asylum of the patients where tubercle has proved fatal, has generally been prolonged. One death occurred after a residence of one year; after two years, three; after five, two; after seven, two; after nine, one; and after twenty-two, one.

In some cases, long residence in an asylum must aid in the production of the disease, for while the hygienic conditions there are, on the

whole, satisfactory, no allowance is made for individual susceptibilities. In many cases the courses of the mental disease are also causes of tubercle. Among these may be ranked want of food, exposure and excitement. Intercurrent maladies, especially of the lungs, by their slow progress, and the long convalescence, favour the production of tubercle.

Tuberculosis occurring in the insane is due to the weakening of the vital powers of the organism. This weakening may depend entirely on the nervous disease; or partly on that and on intercurrent diseases, external circumstances, and certain natural conditions, still badly defined.

In the insane, the ordinary signs and symptoms of phthisis are generally wanting, until a very late period of the disease. Physical examination is generally unsatisfactory, but the use of the thermometer affords valuable information. As a rule, the development of tubercle has no effect on the advance of the mental disease, and generally appears during the last stage of the latter.

In the paper fourteen cases are detailed, with notes of the post-mortem appearances. In only one of these was a cavity found in the right lung, while the left was nearly always much diseased.

On Remissions in General Paralysis.

In this paper the conclusions arrived at are—

1. Remissions are most frequently observed when the general paralysis has begun with an attack of mania.

2. These remissions are simply the recovery from the mania with persistence of the first symptoms of paralytic dementia. Such also is the case where melancholia or monomania has been the prominent feature of the attack.

3. The frequency of recovery in the maniacal form is explained by the frequency of recovery in simple mania, the mania being regarded merely as a complication. In support of this view, the resemblance between simple and paralytic mania must be observed, as well as the fact that many cases of general paralysis occur in which neither mania, melancholia, nor monomania is developed.

4. In admitting that the various forms of insanity often complicate general paralysis at its onset, the anomaly disappears of a malady, which in its latter stages is so very uniform, offering at its beginning the symptoms and lesions of conditions so opposite as mania and melancholia.

On the Changes in the Heart, Liver, and Kidneys in the Insane.

In this paper Dr. Dufour tabulates his notes of the autopsies made in sixty-one cases, demonstrating the frequency of the occurrence of disease of the thoracic and abdominal viscera in the insane. In 74 per cent. changes were found in the heart, in the lungs in 55 per cent., in the pleuræ in 47 per cent., and the pericardium in 21 per cent. The

liver was diseased in 74, and the kidneys in 37 per cent. In some cases the disease of the heart or other organs precedes the mental affection, in others, as the result of prolonged disorders of innervation or of their causes, changes are induced leading to chronic inflammation or fatty degeneration. A mere derangement of the nutritive changes soon gives rise to the more apparent lesions.

In the lungs and pleuræ, inflammation, tubercle, and gangrene are readily developed; more than a quarter of all the cases recorded presenting old-standing pleuritic adhesions. The pericardium is more rarely affected, the fluid being increased in eleven cases; milky spots were present in five cases, and pericarditis in three. Of the lesions of the heart, mitral disease is much the most common, the valve being found simply thickened in seven cases, and atheromatous in twenty-three, and as a rule it is accompanied by disease of the other valves and muscular substance. In fourteen cases the muscular substance alone was affected, the lesion being either fatty degeneration or simple hypertrophy. The right side of the heart rarely presents any abnormality beyond simple dilatation.

The chief changes found in the liver are fatty degeneration with hypertrophy, and, much more frequently, atrophy more or less advanced. The gall-bladder is often distended, and often empty and atrophied. Gall-stones are of frequent occurrence. The bile varies in quantity and quality, being found sometimes semi-solid, and of a blackish colour, at other times nearly white. In thirty-one cases lesions were found in the heart and kidneys as well as the liver; in seven in the heart and liver; and in seven others in the liver alone.

The spleen is often found either extremely soft or much hardened, the capsule being much thickened, and cartilaginous in consistence. The kidneys are found to have been the seat of the various forms of inflammation and of fatty degeneration, and are hard and atrophied or simply fatty.

The diagnosis of many of these conditions in the insane during life is often most difficult, but is of great importance in forming a prognosis; their presence giving rise to a defective nutrition, which not only prevents recovery, but may even produce some form of mental disease.

Periodic Amnesia.

In this paper Dr. Azam relates a case in which he has observed an impairment of memory of a most unusual form. Felida X— was born in Bordeaux, in 1843, of healthy parents. During infancy delicate, at the age of thirteen she was normally developed, and at this period symptoms of hysteria first appeared; while on attaining the age of fourteen and a-half the phenomena about to be noted were first observed.

Having been judged insane by her friends, she was brought under the observation of Dr. Azam, who describes her as of middle height,

dark, and fairly nourished. In conversation she is intelligent and well informed, but reticent and dejected in manner, often suffering severe pain, and thinking continually of her unhappy condition. Nearly every day she suffers an attack of which the course is much as follows: Seated at work, an unusually severe pain is felt in the head, which falls forward on her breast, while her hands drop by her sides, and she appears to sleep. From this sleep she cannot be roused even by pinching or pricking, but wakes in two or three minutes, apparently a changed individual. She now wears an expression of happiness and gaiety, humming as she continues the work she had dropped, or leaves the house to visit her friends, apparently in boisterous spirits. In this condition she can recollect events which have happened during these attacks and during her ordinary condition, and urges that it is her normal state. In 1858 these attacks occurred nearly daily, and lasted for three or four hours, after which the gaiety vanished, the state of torpor recurred for a few minutes, when she would wake to her ordinary existence. She has then no recollection of the hours she has just spent, of the visits she has paid, or of the work she has done and may have in her hand. At this time a third condition was occasionally observed, characterised by signs of extreme terror, and was probably due to the hyperæsthesia of her special senses. Further proof of the complete separation between her two existences was soon obtained. In her second or happy life she became pregnant; in her normal state she was ignorant of the fact, and suffered a severe attack of hysterical convulsions when informed of it by a neighbour, for in her second condition she feared to make her state known. In the end of 1859 she was confined, and her condition slightly improved, and during the two following years no phenomena of importance were observed, while during the next year the attacks appeared with less intensity. A year later she again became pregnant, and for three years suffered numerous attacks and exhibited all the worst symptoms of hysteria. During the three succeeding years the attacks remained nearly in abeyance, but often recurred during the next six years. During all these years the duration of the attacks gradually increased, most of her existence eventually being spent in them.

In 1876 her condition was as follows: Her intelligence is unimpaired, and she manages a shop. She still regards her normal condition as the abnormal, and complains that she is often perplexed by the complete loss of memory from which she suffers in, to her, the abnormal state. The periods of stupor ushering in each condition have become so short that, except by her husband, they are unobserved. As at the beginning of the disease, during the first period she is diligent and sad, while during the second she is bright and happy, and exhibits greater intelligence.

Dr. Azam, in his remarks upon the case, asks how the condition described is to be named. Is it a case of double consciousness, or

simply an affection of the memory, the other faculties remaining intact? M. Littré has defined double consciousness as a state in which the patient, whether with the sensation that he is double or without it, has two states of existence, in each of which he is without recollection or knowledge of the other state. Clearly Felida is not such a case, possessing in one of her states of existence the recollection of both lives. Neither is her condition analogous to somnambulism, natural or artificial, nor to the states induced by alcohol, hachisch, belladonna, or opium, and it is easy to conceive how the misery resulting from the loss of memory may result in the depression which characterises the first of her conditions.

If it is right to ascribe all the phenomena of the disease to a periodic loss of memory, then all these phenomena point to the faculty of memory being localised in some one part of the brain. The amnesia is probably due to a temporary or periodic contraction of the vessels distributed to that part where memory is localised, and this contraction may be regarded as dependent on the hysteria from which the patient suffers.

On the Difficulty of Speech in General Paralysis.

After proposing the term "Dysphasia" as a substitute for the usual "difficulty of speech," M. Gallopain proceeds to investigate the seat of the lesion. He adopts the theory that the dysphasia is due to the lingual and labial ataxy, which in their turn result from a lesion of the ganglia in the floor of the fourth ventricle, and more particularly of those from which the hypoglossal and facial nerves take their origin.

Pathological Anatomy.—In every one of sixteen examinations lesions were found in the floor of the fourth ventricle, affecting the membrane, the vessels, and the nervous substance. The membrane which covers the floor is spread over with granulations, more or less apparent, in one case amounting to papillæ. These are formed of connective tissue, and are found in diseases other than general paralysis. The walls of the vessels are thickened, and minute hæmorrhages are occasionally found between the white and grey layers of the floor of the ventricle, while the vascularity generally is increased. The grey matter is nearly always more or less softened and semi-transparent, sometimes gelatinous in consistence, and of a light yellow colour. Microscopically, in the fresh state it is found to contain finely granular amorphous matter, isolated fatty particles, altered blood corpuscles, but chiefly cells of various sizes, round or oval, with homogeneous contents. In the nuclei of the facial and hypoglossal nerves some cells are seen with their nuclei, nucleoli, and processes, but nearly all have lost their shape and are altered in colour. The white substance beneath is generally found softened, but in one case it was hardened.

Labial Ataxy.—In a patient suffering from this affection, any movement of the affected parts, of a determined direction and

extent, is preceded and still more followed by involuntary movements, having the same direction but generally of less extent. The involuntary movements are the more pronounced, as the extent and rapidity of the voluntary movements are increased. Thus patients have more difficulty in uttering a consonant than a vowel. During the first period of the disease fibrillar contractions are observed during unusually extensive movements, but gradually become more common, and are accompanied by repetition of the movements. In the early part of the second stage the fibrillar contractions become rare and repetition of the movements common. As a rule the patient becomes conscious of these movements, and attempts to limit them by keeping the jaws very close while speaking. In the middle of the second stage the upper lip hangs a little, and the patient appears to fear to use it, while towards the end of this stage paralysis becomes more marked, often affecting one side more than the other. In the third stage the movements of repetition for the most part disappear, and fibrillar contractions take their place.

Glossal Ataxy.—The disorders of movement in the tongue resemble those of the lips, and may or may not accompany them. Great difficulty in protruding the tongue is observed in two-thirds of the cases.

Dysphasia.—The following changes may be observed in the speech of General Paralytics: 1. Incomplete pronunciation of a syllable. 2. A syllable is omitted from a word. 3. Incomplete repetition of a syllable. 4. One or more complete repetitions of a syllable. 5. Arrest of speech occurring suddenly at the moment of utterance. 6. Hesitation of speech. 7. Extreme and uniform slowness of speech. 8. Dumbness. Of these, the first four are readily accounted for, by recalling the alterations of function arising from the labial ataxy. Hesitancy of speech is a more complex phenomenon resulting from a sustained action of the will and intelligence. Feeling that the repetition of the movements required for the syllable just uttered prevent his uttering the next, he dwells on the vowel until he is able to proceed. In these circumstances, slowness of speech is also observed. In some cases the co-ordinate movements are repeated completely and indefinitely, and then speech becomes impossible, and the patient, wearied of the attempt, remains silent. Dumbness may also be due to very advanced paralysis of the lips and tongue, and when present during and after congestive attacks probably arises from compression of the parts whence the facial and hypoglossal nerves spring.

Diagnosis.—The morbid phenomena already described are pathognomonic of general paralysis. In stammering there are disorders of respiration, which are not observed in general paralysis. The stammer is due either to convulsive arrest, or convulsive repetition of a syllable, while dysphasia presents eight different forms. In hemiplegia with difficulty of speech, dysphasia is absent, while the tongue is always drawn to one side, a rare occurrence in general paralysis.

In cerebral softening, after the loss of a greater or less number of teeth, and in organic disease of the tongue, a thickening of speech occurs, which does not, however, at all resemble dysphasia. In stuttering, speech is too rapid, in dysphasia it is slow. In the difficulty of speech which sometimes accompanies chorea, there is some resemblance to dysphasia, but in chorea the ataxy may be observed during repose of the parts, while in general paralysis it only accompanies voluntary movements. The trembling of the lips seen in anger, indignation, and fear, disappears when the patient becomes calm. In multiple cerebral sclerosis the difficulty of speech closely resembles that of general paralysis, and the other symptoms presented must determine the diagnosis. When a patient maintains absolute silence, the characteristic trembling of the lips may be observed, if the face is made to assume the expression of suffering.

Conclusions.—In general paralysis there are always lesions of the floor of the fourth ventricle, consisting chiefly of proliferation of the cells of the interstitial tissue, leading to destruction of the higher elements, notably of the cells of the grey matter of the nuclei of the facial and hypoglossal nerves.

These lesions manifest themselves symptomatically by labial and lingual ataxy, that is, any movement of determined extent and direction is preceded, and, still more, followed by a series of movements in the same direction but of less extent.

The repetition of movements direct and opposed, which precede and follow a given movement, varies with the extent and rapidity of that movement.

Dysphasia is the natural and necessary result of the labial and lingual ataxy.

Dysphasia may be manifested in the eight forms already enumerated.

The general paralytic tries to lessen the dysphasia by speaking slowly and closing his jaws.

The intimate connection between the labial and glossal ataxy and dysphasia stamps the latter as altogether peculiar to and pathognomonic of general paralysis.

On General Paralysis as a Predisposing Cause of Fractures.

René R., an advanced general paralytic, fifty years of age, while walking in the airing-court, fell on his right shoulder and fractured his humerus. Five days later he died, and on post-mortem examination, in addition to a long oblique fracture of the shaft of the bone, three fissures, more or less gaping, were detected. Microscopic examination of the bones revealed proliferation of the fatty elements in the medullary, spongy and hard portions. The denser portions were often much thinned, and from all parts a fatty oozing might be observed.

On the use of Coloured Light in the Treatment of Insanity.

Dr. Taguet has in many cases tested the value of subjecting excited patients to the influence of blue light, and has never observed any benefit arise from its use.

On the Relations between the Disorders of Movement in General Paralysis and Lesions of the Cortical Substance of the Fronto-Parietal Convolutions.

I.—It may now be regarded as certain, that in man and the higher animals motor centres are located in the cortical layer of convolutions in the middle part of the cerebral hemispheres. This fact is explained anatomically by the presence in these convolutions of special microscopic elements; the giant pyramidal cells analogous to the large motor cells of the anterior horns of the spinal cord. These large cells are rarely met with elsewhere than in the two ascending convolutions, and it is in these convolutions and their immediate neighbourhood, that nearly all the motor centres described by Hitzig and Ferrier are located. On this subject Dr. Foville adopts the conclusions of M. Lépine. These are—

1. The centres for the movements of the anterior and posterior limbs of the opposite side occupy the two upper thirds of the ascending parietal convolution; the upper limb alone appears to have, in part, its centre in the upper third of the ascending frontal convolution.

2. In the posterior part of the first frontal convolution, that which skirts the fissure between the hemispheres, there is found a centre for the movements of the head and neck.

3. In the posterior part of the second frontal convolution there is a centre for the jaws, the lips, and the tongue.

4. Posteriorly in a special convolution of the parietal lobe (gyrus angularis) there is a centre for the eye-balls.

Dr. Foville adds to these, that if the centres for the limbs exercise a cross action only, those of the lips, tongue, and jaws may have a bilateral action.

II.—General paralysis is distinguished from other forms of cerebral disease, by two predominant features—the one symptomatic, the other anatomical. The first consists of the various derangements of motion, the second of a lesion of the grey cortical substance exhibiting chiefly adhesion of the meninges, thickenings and infiltrations by plastic deposits on the surface of the convolutions, and by softening of the subjacent grey matter. In removing the meninges, portions of the grey matter are detached with them. These adhesions are found chiefly in the anterior portions of the frontal lobes, and in the immediate neighbourhood of the fissure of Rolando, the region containing the principal motor centres.

Up to the present time these anatomical lesions have been associated with the mental rather than the motor symptoms of general paralysis, and the most recent works attribute the motor symptoms to

disease of the medulla and spinal cord. Now the frontal lesions are constant, while those of the medulla and cord are not so, and are met with in other diseases than general paralysis.

III.—It has been shown that the electric excitation of any motor centre in the convolutions determines contractions in a muscle or group of muscles on the opposite side, and that the same muscles are always affected when the same point is irritated. If the excitation is slight the contractions are physiological, if prolonged, convulsions are induced, at first slight and limited, but eventually constituting a real epileptic attack affecting the whole or part of the side. Temporary paralysis sometimes follows. If the cerebral substance, where the centre is located, be destroyed, paralysis of longer or shorter duration ensues.

In the brain of the general paralytic there is first hyperæmia of the meninges of the cortical layer, chiefly in the region of the anterior cerebral and sylvian arteries, a hyperæmia which, from time to time remits, and ends in sclerosis and atrophy of the nervous tissue. In general paralysis the motor symptoms follow a course resembling that of the symptoms induced by electric excitation. At first there is slight trembling in certain groups of muscles, then the trembling becomes more marked, and may be accompanied by violent functional excitation, while later convulsions, limited or general, occur, to be followed often by paralysis. It is of importance to observe that the lesion which gives rise to these symptoms must be limited, and cannot be located in the trunks of nerves or in the nuclei of the medulla oblongata; for in general paralysis the motor affections are often confined to a small group of muscles.

The general characters of the phenomena obtained by experiment on the cortical motor centres, that is to say, the disassociation of movements, their exact limitation, their variety of position, their remissions and reproductions, and the progressive aggravation of the convulsive and paralytic attacks, are faithfully reproduced in the evolution of the motor disturbances of general paralysis.

IV. In the posterior part of the third frontal convolution, where, by the theory of Broca, the faculty of speech is located, the motor centre of the tongue and jaws is found, and a little higher in the posterior part of the second frontal convolution, there is the motor centre of the lips and muscles innervated by the facial. Now, these are the points where adhesions of the meninges are most frequently found in general paralysis. Grinding of the teeth may be referred to a lesion of the motor centre for the jaws, and to lesion of the centre for movements of the head and neck may be attributed the convulsive movements and inclination to one side of the head so often seen. The more extensive convulsions of the limbs are due to lesions of the upper portion of the two ascending convolutions. The motor centre for the eye-ball and pupils is located in the gyrus angularis, and here adhesions are much more rare. Trembling and convulsions are rare

in these muscles, and the contraction and dilatation of the pupils, so often seen, are probably due to increase or diminution of the motor power of this centre.

V. *Conclusions.*—The pathognomonic features of general paralysis are, viewed symptomatically, constant disorders of movement; viewed anatomically, a constant lesion of the cortical substance of the fronto-parietal convolutions.

2. The most recent works tend to attribute the motor disorders in general paralysis to more or less manifest histological changes of the medulla oblongata and spinal cord, and thus the relations of cause and effect cannot be established between the anatomical lesion and the symptoms of the disease

3. The discovery by Hitzig and Ferrier of an excitable and motive region on the surface of the convolutions of the middle part of the hemispheres permits of the establishment of this relationship.

4. The existence in this region of cortical motor centres for movements of the upper and lower limbs, of the neck and head, of the tongue and jaws, of the face and lips, and of the eye-ball and eyelids, allows an exact statement to be made of the localization of the ataxies, convulsions, contractions, and partial paralyses, limited to such and such of these organs in general paralysis.

5. It is at first by the excitation produced in these different motor centres by the hyperæmia of the beginning of the disease, and next by the successive congestive attacks of the middle part, and then by the progress of the sclerosis of the period of decline, that the progressive disorders of motion are explained.

6. In general paralysis the cortical lesions of the fronto-parietal convolutions are the direct cause of the disorders of motion; and on the localisation and gravity of these lesions depend the localisation and intensity of the ataxies, spasmodic and paralytic.

Note on the Use of the Œsophageal Sound in Forcible Feeding of the Insane.

Dr. Sizaret believes that the sound should always be introduced through the nose. The tube having been guided as far as the pharynx, an assistant injects through it a small quantity of ordinary brandy by means of a small glass syringe. This occasions a movement of deglutition, and the sound, slightly pushed by the operator, is at once swallowed.

On the Malady of the Scythians.

The essential features of this disease are loss of virility at an early age, and an alteration in the skin of the face and body. The features resemble those of a woman, while the whole habits of life are changed, gradually approximating those of the opposite sex. The skin becomes wrinkled, the beard disappears, the body loses greatly in strength, and the patient often assumes the costume of a woman. The men among

whom these patients are found spend a great part of their lives on horseback, and most authors agree in regarding this as the chief cause of the disease, giving rise to spermatorrhæa and habits of masturbation. To this Dr. De Montzel adds two others, the influence of the climate and the belief that the disease is of divine origin.

Contribution to the Study of Aphasia.

In this paper Aphasia is looked at from a medico-legal point of view. In only a few cases of aphasia do the intellectual faculties remain intact. If it be recollected that persistent aphasia is generally a symptom of grave cerebral lesion, as softening or hæmorrhage, it will be easily understood why intelligence is enfeebled, and further why examination of the mental state in these cases presents special difficulties. In aphasia with persistent hemiplegia, the mind gradually becomes enfeebled, the patients assuming a child-like manner.

In another class, the patients, after recovering from the hemiplegia, exhibit only slightly impaired mental powers, being able to read and exchange ideas while still unable to articulate.

In cases where the aphasia has been of short duration, the intelligence may remain unimpaired. At the same time, in many cases where the aphasia has disappeared the mind is slightly enfeebled.

The cases in which after aphasia the intelligence remains intact, can only be explained by a cerebral substitution, the substitution of one hemisphere by another. In support of this theory, Dr. Billod urges that the identity of function of the hemispheres ought to be admitted as a law, and believes that Broca, in localising the faculty of speech in the third frontal convolution of the left side, does not intend that the corresponding convolution on the right side should be regarded as devoid of that function. It is undoubted that, since right-handed people are so much more numerous than left-handed, the left hemisphere possesses greater functional activity than the right, and consequently is more frequently diseased. Many observations in support of this have been recorded, and further, the left hemisphere has been found almost invariably to be heavier than the right. It may be presumed, then, that the third frontal convolutions share the conditions of their respective hemispheres, the left being the more active in the normal condition. Should then any lesion of the left side occur, the right side, by its increased functional activity, may maintain the previous standard of intelligence, but fails to innervate both sides of the larynx, and the aphasia persists.

Appended to this paper Dr. Billod relates a case of General Paralysis, in which complete aphasia was observed. On post-mortem examination lesions of the posterior and inferior part of the third frontal convolutions on both sides were found.

On a Case of Melanopathia in a Lunatic.

Paul S., a demented general paralytic, entered the asylum in August, 1873. In June, 1874, slight darkening of the skin of the eyelids was

first observed, and during eight days this discolouration increased in extent and intensity. On each side the eyelids and skin over the malar bone presented an absolutely black colour, while a narrow, black band crossed the upper part of the nose, and united these patches. Seven days later the colour began to fade, and in fifteen days had completely disappeared. At no time were there any inflammatory signs or special mental symptoms.

On Heredity in Alcoholism.

In this paper Dr. Taguet relates the histories of several families in which, the parents having been drunkards, the children were either intemperate, or suffered from some form of nervous disease.

In the first case recorded, the father is a drunkard and debauchee; the mother is of sober habits, but the daughter and sister of drunkards. Of five children, the eldest resembles his father. He has three children, the eldest of whom has given birth to a hydrocephalic child. Her sister is of loose habits, and her brother an epileptic, drunken imbecile.

The second brother has been twice in an asylum, suffering from acute mania.

The third brother died at twenty-seven of acute tubercular phthisis.

The elder daughter married a sober and intelligent man, and had six children, of whom one became a drunkard and criminal.

The younger daughter has deserted her husband, and leads a loose life.

In the second observation, the father died of cerebral softening, the result of habitual alcoholic excess; the mother of ascites. Their two children appear to have escaped all hereditary taint. The daughter is married to a healthy man, and has six children. The first is an idiot, and born blind. The second and third are of feeble intellect. The fourth was born blind, and is of feeble intellect; the fifth is healthy, and the sixth, born blind, and still very young.

In the third case, the grandfather was a drunkard, and his wife died of specific cirrhosis. Their only son was odd in character, and died of alcoholism in an asylum. His son was timid and impressionable, and is now suffering from mania. He had three children, of whom the eldest lived only a few days; the second remains healthy, at two years, and the youngest was hydrocephalic and died of convulsions.

The usual advance of the nervous symptoms observed in successive generations of drunkards, is as follows:—In the first generation, depravity and drunkenness; in the second, drunkenness, mania, and general paralysis; in the third, hypochondriasis and melancholia; and in the fourth, imbecility, or idiotism, resulting, probably, in extinction of the race.

On Epilepsy, from Malformation of the Skull.

True epilepsy, unless traumatic, appears between the ages of ten and eighteen, the period during which ossification occurs in the various

sutures at the base of the skull. Deformities of parietal and occipital bones may be more or less harmless, compensatory growth being possible, but such is not the case with respect to the bones attached at once to the face and the base of the skull. Normal ossification having occurred, the base of the skull will be symmetrical, and it is long since the theory was advanced that deformity of the occipital foramen played a part in the production of epilepsy. Want of symmetry in the base of the skull is revealed by a similar condition of the bones of the face, and this condition may easily be detected. In the true epileptic, it consists of a projection of one of the halves of the frontal, generally the right. As a rule, it occupies a position over the eye, but may be found more posteriorly reaching to the fronto-parietal suture. This projection may be detected by sight and touch, and other deformities may then be looked for. These are found in the orbit, the malar bones, and the palate. The soft parts may participate in the deformity, the eyebrows and lips being altered in position, or the folds of the skin more marked on one side than the other.

Rare Case of Nervous Disease. Life in part double.

In this case the patient was a girl of about thirteen years, of scrofulous habit, and with a family history of nervous disease. The peculiar feature of the malady was the recurrence, at intervals, of attacks, during which the patient was conscious of, and recognised only, one-half of her surroundings. Thus she would rise from bed, dress, and occupy herself in domestic work, and fail to discover that any one seated near her was in the room. Of these attacks she had no recollection. Some months later, menstruation having become established, the attacks disappeared, or nearly so.

PART IV.—NOTES AND NEWS.

THE COUNTY FINANCIAL BOARDS' BILL.

A special meeting of the Medico-Psychological Association was held at the Westminster Palace Hotel, on Wednesday, February 27th, at the request of a number of its members, with reference to the effects of this Bill upon the position of superintendents and other officers of County Lunatic Asylums. Dr. Blandford presided, and there were present Dr. Bucknill, Dr. Rogers, Dr. Manley, Dr. Maudsley, Drs. Parsey, Hack Tuke, Christie, Adams, Rayner, Nicholson, Paul, Major, Stocker, Daniels, Wright, Lindsay, Duckworth Williams, Green, Savage, Sutherland, Walford, and two or three others.

Dr. ROGERS introduced the subject, observing that the County Lunatic Asylums of England, as now managed by committees of the country magistrates, would compare favourably with any other asylums in this country, or in Europe or America. But it was now proposed to put them under the management of the new County Financial Boards. The medical superintendents of such asylums felt naturally anxious to know what the effect of this change

would be on their own personal prospects. Their case was not exactly like that of the Poor Law medical officers, who usually accepted their posts with a view to waiting for the chance of getting a private practice. But all they could just now ask of the Government was to postpone that part of the intended legislation which affected the county lunatic asylums, until the report of the Select Committee upon a consolidation of the Lunacy Acts should have been received. What they must especially desire was the confirmation of their existing rights with regard to retiring pensions. He mentioned an instance that lately occurred in Lancashire, where a disposition to withhold these rights had been shown. They were, however, in general fairly treated by the existing managers of the asylums, and they ought not to be placed in jeopardy of a worse position. It would make them feel more safe, if the Government would undertake the payment of salaries and pensions in the asylums, instead of the present Treasury allowance of four shillings a week for each pauper inmate. He moved that a deputation be appointed to wait upon Mr. Sclater-Booth.

Dr. ADAMS (Cornwall) bore testimony that the superannuated and retiring officers of an asylum were now fairly and generously dealt with by the magistrates. If the management was henceforth to be placed in other hands, he should wish to see a provision inserted in the Bill, that a superintendent or other officer of an asylum, after twenty or thirty years' service, should be entitled to a pension equal to two-thirds of his salary.

Dr. BUCKNILL (who wrote upon the subject in the "Journal" more than twenty years ago, with reference to the case of the Rainhill Asylum), expressed his strong opinion that the custody of the insane poor ought never to be entrusted to the Poor Law Guardians, or to Boards elected by them. It was a matter involving the power of imprisonment, and should be reserved for the justices or magistrates. He would urge upon Mr. Sclater-Booth, and upon Parliament dealing with this Bill, that the management of asylums, and treatment of the insane, should still be left to committees of the county magistrates, only allowing the elective members of the County Boards to participate in the financial business of the asylums, which might be reserved for quarterly meetings.

After some conversation, in which Dr. PARSEY, Dr. NICHOLSON, and others took part, a resolution that a deputation should see Mr. Sclater-Booth, and should ask him to except the management of lunatic asylums from the operation of the Bill, was moved by Dr. ROGERS, seconded by Dr. MANLEY, and carried unanimously. Dr. PARSEY next proposed a resolution in accordance with the view of Dr. Bucknill, that in the event of Government not consenting to except asylums from the Bill, the deputation should ask for a restriction of the powers given to the new elective members of County Boards, with regard to asylums, limiting them to financial affairs, but leaving the general management of asylums in the hands of the Visiting Justices. This was seconded by Dr. LINDSAY, and carried unanimously.

A third resolution was moved by Dr. PARSEY, declaring it to be the opinion of the Association that the officers of county asylums ought, after twenty-five years' service, to have a claim by right to retiring pensions of not less than two-thirds of the value of their offices. It was considered by the Chairman and other members inexpedient to make this part of the instructions to the deputation which would go to Mr. Sclater-Booth, as it would seem to exceed the scope of the Bill now before Parliament. But several of the members warmly supported the view set forth in this resolution, and different modifications of it were propounded; one being that the retiring pension above-mentioned should be a claim of right for officers of asylums above fifty-five years of age, after twenty-five years' service. But it was added that this provision of right should not interfere with the existing permissive power of granting pensions in other cases, which is now vested in the Committees of

Visiting Justices and Courts of Quarter Sessions, and which is to be transferred to the County Financial or Administrative Boards. Dr. MANLEY, in supporting the resolution, quoted the report of a Select Committee of Parliament, in April last, on the Police Superannuation Fund. That Select Committee was in favour of adopting the principle that the claim to a certain pension, after a certain number of years' service, should be recognised as a right; the pension to be calculated upon a scale rising, by fiftieths of the wages or salary, at a varying rate, in different successive terms of service years. It was recommended by the Select Committee that, after fifteen years' service, any member of the police retiring upon a medical certificate of infirmity should have a claim to such pension; but that after twenty-five years' service any one should have a right to it without that condition. The medical superintendents of lunatic asylums ought to be treated as well as police constables. After some conversation to this effect, the resolution was passed.

A deputation was subsequently chosen to seek an interview with the President of the Local Government Board next day.

Before the meeting separated, Dr. HACK TUKE brought under notice another part of the Bill, which gave the County Boards power to establish special asylums for the imbecile or idiot children of the poor, similar to that established at Clapton, under the Metropolitan Asylums Act. His object was that this should not be regarded as Poor-Law parochial relief, as there were many respectable artisans and others who ought not to be looked upon as paupers, and who might be glad to pay what they could afford towards the maintenance of an idiot child in such an asylum, though it was erected at the cost of the poor rate. He moved a resolution, which was seconded by Dr. Adams, and was agreed to, that this opinion should be expressed by the Association. This concluded the business of the meeting.

On the next day (Thursday, the 28th), the deputation waited upon Mr. Selater-Booth, at the Office of the Local Government Board, in Whitehall.

DEPUTATION TO THE LOCAL GOVERNMENT BOARD.

On Thursday, the 28th February, 1878, a deputation composed of members of the Medico-Psychological Association waited on the Right Honourable Selater Booth, M.P., in reference to the "County Boards Bill." Among those present were Colonel Ireland Blackburne, Dr. Rogers, Dr. Adams, Dr. Lindsay, Dr. Stocker, Dr. Manley, Dr. Hack Tuke, Dr. Bucknill, and Dr. Rhys Williams.

Colonel IRELAND BLACKBURNE, in introducing the deputation, said: I have much pleasure in introducing to you, sir, the gentlemen whose names have been laid before you, and who constitute the deputation from the Medico-Psychological Association. Without any further preface, I may say that they desire to lay before you certain things in connection with some of the clauses in the "Local Boards Bill," which is to be submitted to Parliament for its consideration.

Dr. MANLEY—As one of the deputation of the Medico-Psychological Association, I have been requested to call your attention to the first resolution passed at a special general meeting of the Association, to which I have the honour to belong, on this important question. The resolution is as follows:—"That County Asylums in common with Prisons and Police be exempted from the operations of the County Government Bill." They think further, that if it has been considered necessary to exclude prisons from the Bill now under consideration, there is at least the same reason why asylums should be exempted from its operation; the patients being, in fact, *quasi* prisoners during their residence in the asylum. I beg you will permit me to mention some reasons why it appears to this Association that County Asylums and their staffs should

remain under the same control as at present—at least, until there is a revision and consolidation of the Lunacy Acts. They think so because under it English County Asylums have obtained a position for good, which has not been reached by similar institutions in any other country. That many of the persons now holding superior offices in them have devoted their time, from very early years, to the subject of insanity and the treatment of the insane, and that in doing so they have served in other asylums than those to which they are at present attached, and are, therefore, not local officers merely. On the contrary, they are virtually as much servants of the State as soldiers who have served in the colonies, in India, or at home; or as sailors who have done duty under the flag in the Pacific, the Mediterranean, or with the Channel Fleet. From the mere nature of their duties they are daily subject to personal injury from those over whom they have charge. Many officers and servants in discharging their duties have been seriously injured. There was one instance I well remember. It was the case of a former patient of mine, who was coming down south with the avowed purpose of murdering the surgeon or myself, or both of us, if he could. Even without suffering any personal violence, the duties in themselves are anxious and onerous, the consequence being that the mental, together with the physical wear and tear to those living with the insane are something enormous. So great, indeed, are they, that not a few of the persons so engaged have broken down themselves and become totally incapable of continuing in their various offices. A great, if not *the* great, inducement to persons to seek employment in asylums is the prospect of the pension to which they are entitled, under certain conditions under the Lunacy Act. Those conditions were at first twenty years' service, and the age of the recipients to be 50 years. On a subsequent revision, however, the period of service was reduced to fifteen years—a fact which clearly showed that the Legislature was fully cognisant of the depressive influences of asylum life. There is another point to which I wish to call your attention, and it is, I think, a not unimportant one, when taking this question into consideration. It is that in consideration of an impending pension the salaries and emoluments have been smaller than they would have been under other considerations. In conclusion, I may be allowed to state there are many officers and servants in County Asylums who have served for twenty-five years and upwards, and who are at the present time entitled under the terms of the Act to pensions, and I say it with great respect—not speaking of our own case, or personally—they can scarcely have confidence that they will receive the same consideration from a Board whose members change every year, as is contemplated by the Bill, as they would from a permanent Board constituted as the Court of Quarter Sessions is, of magistrates under whom they have worked for a series of years, and to whom the affairs of the asylum and the conduct of the staff have been reported year after year by a committee of themselves, and who have had the management of the Establishment. I would again repeat, therefore, if there is any necessity to exclude prisons and police from the operation of the Bill, there are equally good grounds, if not better, for doing the same by asylums.

Dr. BUCKNILL—I have the honour to read to you the second resolution come to by this Association. Before I do so, however, I may mention that this Association is a most important body, not only as regards its numbers, but also with respect to its influence and knowledge. It comprises 400 members and more, all of whom are medical men of more or less eminence in this country, in fact in the United Kingdom, who are engaged in the treatment of the insane. A meeting of this Association was held last Wednesday for the express purpose of considering this Bill—the Local Government Bill. At that deliberation they came to the conclusion that some alterations should be made in it for the purpose of making it a just measure. And after much consideration had been bestowed upon the subject, the following resolution, which I shall now have the honour of reading to you, was unanimously come to:—"If this alteration in the Bill be

not made, that the powers of the new elective members of the Administrative Boards be restricted to the financial affairs of the County Asylums, the general management of such asylums being left in the hands of the Visiting Justices." I, bringing that resolution under your notice, am not going to waste your time with a description of the working of the County Asylums, nor with the character of the treatment and management of the patients in them, because in all those subjects I know you have great and varied experience. Neither need I weary your attention by recalling to your mind the great differences in the treatment which is resorted to in asylums, and that which is carried on in prisons and union houses. The necessity for treating lunatics is not voluntary, but still when certain unhappy portions of the community are afflicted with such a grave and great misfortune, they must be properly cared for, which they certainly always have been under the existing state of things. The present Act nominates the magistracy to look after the treatment of the insane, and under their *régime* I do not think the public has been duped in the matter. For my own part, I can speak of such things with certainty, because my experience extends over a period of 35 years. I then say, without fear of any contradiction that can be substantiated, from my knowledge of County Asylums in England, and my knowledge of similar institutions in most civilised countries, that there is nothing to be compared with the general high level of the treatment of the insane in this country in any other. That is well worthy of consideration, and it is a satisfactory state of things, which has been brought about in a great measure by the liberality and humanity of the Justices of the Peace. It strikes us forcibly that this Bill gives powers to the Guardians never before asked for, let alone granted. It seems to us exceedingly inconsistent. I hope, therefore, I may be permitted to make another suggestion. It has been said that the reason for giving the Guardians powers by this Bill over the expenditure is that the ratepayers' money shall be looked after. If such really be the case, why should they not have the same powers with respect to prisons? Surely, there is not such a small sum expended on them every year as to render the taxpayers entirely oblivious of the benefits to be derived from a sharp look out as to the expenditure of the money in that direction. Be that as it may, however, the whole of the expenditure with regard to asylums—if the Bill for their future regulation, which is now being considered, becomes law—will be in the hands of the newly-elected Guardians. That we consider unjust and inexpedient. In many parts of the country the men will be chosen for their well-known parsimony and dislike to any kind of expenditure, no matter how necessary. The consequence of that will be the Visiting Justices will be driven out of the field, and as a matter of course the lunatics will suffer. Even supposing the Justices were not got rid of entirely, still it is quite possible, or even highly probable, that they would not readily amalgamate with such a body of men as usually constitute a Board of Guardians. Here, again, the patients would suffer even to almost as great an extent as if they were entirely under the control of the Guardians. That, I hope, will never be the case, as it would be a matter much to be deplored, not only by the humane public, but by the poor and helpless patients themselves.

Dr. ROGERS—The duty entrusted to me is to make known to you, sir, the contents of another resolution bearing upon the same subject to which the two gentlemen who have already spoken have alluded. It is as follows:—"That in view of the power of granting superannuation allowances being transferred from the Committees of County Asylums and Justices of Quarter Sessions to the new County Government Boards, the officers of asylums shall have the right to pensions after a fixed term of service, this right not to interfere with the existing permissive pensions." My position in addressing you appears to me to be somewhat invidious, but you will readily understand, as a Chairman of Visiting Justices for many years, the feelings which would induce a man in my position to address you. I was in her Majesty's service for some considerable time, and you may be certain that I paid some attention to the question of

retiring pensions and allowances. In the Acts of Parliament 1852-3, and subsequently confirmed—

THE PRESIDENT OF THE LOCAL GOVERNMENT BOARD—They are not touched by this Bill.

Dr. ROGERS—Oh! but the opposition to these pensions under those Acts always came from the Board of Guardians. There was a case I well remember, and with your permission I will just relate it in order to show with what liberality the Guardians treat gentlemen when about to retire. It was a case of superannuating the Superintendent of the Lancaster Asylum. Mr. Broadhurst was the gentleman's name. He was elected in 1842 as an assistant-surgeon at a small salary, which increased by small yearly additions, until it amounted to £400 per annum. Within only the last eleven years it was increased by £200, though it must be stated Mr. Broadhurst was fed in the Asylum, and had apartments during the previous time. In 1849 Mr. Gaskell resigned, upon which the gentleman already alluded to was elected at £400 a year, a sum which was increased in 1859 to £450, and since 1864 down to the time he retired he was getting £600 per annum. Mr. Broadhurst was not able to save anything out of his smaller salaries, but he did a little when he got his maximum, as he was a frugal man. He sustained, also, a heavy loss in the death of two of his children and the illness of his wife. Still, notwithstanding all that, the committee, consisting of 30 magistrates, only granted £300 a year pension, instead of two-thirds of his salary. That was a nice reward after 34 years' service, and that state of things had been entirely brought about by the opposition of the Guardians. If such a case were possible when the Guardians had comparatively little to say in such questions, what might we expect to witness when they would be almost supreme in those questions touching the disbursement of funds? In order that officers might get fair play we thought that in this Bill a clause might be inserted in order that the superannuations under it might, to some extent, be made analogous to those of the police; also that it might be claimed as a right, and not subject to be given at discretion. In our county there has been no superannuation, I am bound to say, which has been proposed by the justices which has not been granted, but still they have been in many cases most strenuously opposed, which shows the spirit in which they look upon all such grants. I think it is extremely hard in any body of men to have it to say that their pensions originated with a Board of Guardians, which savours somewhat of a pauper allowance. We all feel somewhat anxious with reference to this question, more especially those who have almost served out their time, as we are extremely anxious to know what our future is likely to be. In a word, we wait to be informed whether the ground is to be cut from under our feet or not?

THE RIGHT HONOURABLE SCLATER BOOTH, in reply—I must say that the observations of the last speaker answer the observations made by the previous one, because he found that the liberal conduct of the Visiting Justices was somewhat held in check by the action taken by the Guardians. About the Guardians I do not think you have much to say, or will have any cause of complaint in the future if they and the Justices properly carry out their respective duties. It is perfectly true, as has been stated, that the ratepayers have been very liberal, and given large pensions at the suggestion of the magistrates to their retiring officers, whether over Lunatic Asylums or other institutions; but, still, when I am bringing in a Bill with the avowed object of giving the ratepayers more direct control over these institutions than they have at present, through the medium of the Guardians—I cannot prevent them by any side issue having control over the pensions to be distributed. It appears to me that the magistrates have exercised a very liberal policy in the management of the County Asylums, and I admit fully all that has been said about the good management of these asylums. And, further, I think there is nothing more creditable to our civilization that can be conceived than the good way in which those institutions have been conducted and the results obtained. But when, as I said before, a Bill is introduced for the benefit of the county ratepayers and then to exclude them would be, gentlemen,

really something which I could not undertake to bring before Parliament. The ratepayers are deeply interested in this question. If not so much in the mere construction of asylums, certainly they are in their cheap, and at the same time efficient, working and maintenance. I think you have not given full credit to the wisdom which is sure to govern the administration of the magistrates, and I would give far too little credit to the medical superintendence of the asylums if I said they were not able to take care of themselves. Between you, you have the general management of those places, and you will have the same power, should this Bill become law, under the Commissioners in Lunacy. All that remains, in fact, as it was before. The composition of the Visiting Committee will doubtless be changed, but I am not prepared to say for a single moment that it will have the evil effect which some of you gentlemen seem to think it will. I am inclined to think that matters will go on pretty much as they have before—namely, as far as I can gather, to the general satisfaction of all parties. It will be some satisfaction, however, to the ratepayers to know that their representatives are present at the meetings when their money is disbursed for the purpose of seeing that it is expended in an economical way. That surely is no objection to the Bill. It has been said that the Guardians will prove worse managers than the magistrates. That may turn out to be the case in some instances, but I am not prepared to admit that it will be so all round. In the metropolis there are two Imbecile Institutions, which are managed by 60 persons, of whom 45 are guardians representing the different unions of London. Out of that number one-fourth are nominated by this Board, and they all work exceedingly well together. The economical administration of these institutions is remarkable. In saying that, however, I do not wish to be understood for a single moment that I wish to see a parsimonious economy prevail throughout the whole country—for I would not on any account have the efficiency of any institution or system rendered abortive or crippled by being illiberal. I may state, however, that there is great discontent throughout the whole of the country in connection with the Lunatic Asylums, which has necessitated a change in the constitution of the management; but I do not think any one or anything will suffer from the slight but necessary change which has been sketched. I think the Pauper Lunatic Acts are amply powerful enough to counteract any tendency to bring about such radical change as you appear to contemplate. No one, though, can doubt that these committees of Visiting Justices could have exercised a more rigid economy than they did if they had been differently managed and constituted. I cannot see that there is any need for special clauses to be introduced into the Bill to save those clauses which you think endangered, and in fact I cannot put one in it of myself. If, on the other hand, any of you should think a clause is necessary, and will draw one up, no doubt it will have great weight, and I may promise it shall have the best consideration. I do not think it would be good to add to the stringency of that part of the Bill relating to the retiring allowances and pensions. We profess to amend and deepen the Lunatic Acts, and I think it will be wrong to touch this Bill. In fact I could not undertake to do it.

Vote of thanks to Right Hon. Sclater-Booth for his courtesy.

QUARTERLY MEETING OF THE MEDICO-PSYCHOLOGICAL ASSOCIATION.

A Quarterly Meeting of the Medico-Psychological Association was held at the Royal College of Physicians, Queen Street, Edinburgh, on Friday, 2nd November. Amongst those present were Drs. Jamieson (Aberdeen), Tuke (Edinburgh), Clouston (Morningside), McIntosh (Murthly), Ireland (Larbert), Rorie (Dundee), Howden (Montrose), Wallace (Greenock), Cameron (Lochgilphead), Anderson (Rosewell), Grierson (Melrose), Sanderson (Musselburgh),

Brown (Morningside), Rutherford (Lenzie), Howden (Haddington), &c. Dr. Jamieson was called to the chair.

The CHAIRMAN said that he supposed the minutes of last meeting would as usual be held as read.

Dr. ANDERSON said that he did not think the meeting could be considered properly constituted until the minutes of ~~the~~ former meeting were read and signed by the Chairman.

Dr. RUTHERFORD (Hon. Secretary) explained that as a full report of the proceedings of the quarterly meetings always appeared in the "Journal of Mental Science," which was sent to every one of the members, it had been hitherto deemed unnecessary to read minutes; they were, therefore, usually considered as read.

Dr. ANDERSON moved that in future minutes of the meetings be kept by the Secretary and signed by the Chairman, as was done at the meetings in London.

Dr. CAMERON seconded the motion.

Dr. TUKE said that he could not see the use of the proposal. Seeing that the minutes were printed in the Journal, and in the hands of each of the members, he thought it would just be giving unnecessary trouble to the Secretary, who they must remember was an honorary officer.

Dr. HOWDEN said that his understanding was that the quarterly meetings were to be purely for scientific discussion, and to have no reference to the business of the Association. He thought it unnecessary that minutes should be read.

Dr. TUKE moved as an amendment that the minutes having been printed should be held as read.

Dr. RORIE seconded the amendment, which on a division was declared carried, only the proposer and seconder voting for the motion.

EXHIBITION OF PATHOLOGICAL SPECIMENS.

Dr. CLOUSTON showed a cancerous tumour of the brain, and read an account of the case. (See vol. xxiii., p. 565)

Dr. ANDERSON asked if the retina had been examined?

Dr. CLOUSTON said that the retina had not been examined.

Dr. ANDERSON said they were much indebted to Dr. Clouston for the elaborate case he had brought before them. He would have been glad, however, if he had examined further; the examination of the retina was of great importance in such cases. The condition of the kidneys was evidently that of the ordinary contracted kind; he should have liked to have known whether the inflammatory condition of the stroma had extended to the arteries.

The CHAIRMAN said that this was a very remarkable case of melancholia; as to the changes found in the body, he did not suppose that they were specially connected with that form of mental disease. He would like to know whether Dr. Clouston considered that the pathological conditions had existed before the appearance of the mental symptoms.

Dr. CLOUSTON said he thought there was little doubt of that; the condition of the kidney was not recent, and the tumour could scarcely have grown in less than twelve months.

Dr. JOSEPH J. BROWN exhibited a specimen of and read an account of a "Case of Right Hemiplegia resulting from Closure of the Left Carotid Artery, due to Thickening of Fibrous Tissue around it, caused apparently by the Irritation of Hypertrophied Dinoid Process." (See vol. xxiii., p. 571.)

The thanks of the meeting were awarded to Dr. Clouston and Dr. Brown for their interesting cases.

Dr. RORIE read "An Analysis of the Evidence of the Dillwyn Committee, in so far as it refers to the Scotch Lunacy Acts, and their administration, with remarks thereon." (The paper was of such a nature that it is difficult to give an

abstract of it, and this is the less necessary, considering the space we devoted to the subject in last No. (Jan., 1878, vol. xxiii., p. 457.) Dr. Rorie said the paper he had just read was in his opinion scarcely one which admitted of much discussion; but there was one point on which he would like to have the opinion of the meeting, viz., the certificate terminating the Sheriff's warrant after three years' residence. Notwithstanding the crowded state of the Dundee Asylum, no patient had been discharged under this provision, and in his opinion it was burdensome and useless.

The CHAIRMAN and several of the members stated that that was also their experience.

Dr. ANDERSON said that he had listened with great pleasure to Dr. Rorie's paper, and to the elaborate manner in which he had discussed the evidence. In regard to the Sheriff's warrant, Mr. Commissioner Mitchell had been asked of what use it was, and he said that he thought it was satisfactory to all concerned to know that their case was considered by a legal officer of the Crown. He (Dr. Anderson), on the contrary, thought that the Sheriff's warrant was apt to give the case a criminal aspect in the eyes of relatives, and that the English method of having an order from a relation or a Justice of the Peace was preferable. If the Sheriff's order freed Superintendents from responsibility he could see some use in it, but at present it was in his opinion purely formal, and altogether he thought it would be better if the Scotch law were in this respect assimilated to that of England. As regards the transfer of patients from asylums to poorhouses and private dwellings, and their supervision, he thought that this should be in the hands of the Superintendent of the District Asylum. He would then, having the management of all the lunatics in the district, have no interest in keeping patients in the asylum. He saw no advantage in boarding out, unless the patients were to be under strict supervision.

Dr. IRELAND said he could not agree with Dr. Rorie in thinking his interesting paper unsuitable for discussion. Although Dr. Rorie did not close his paper by proposing any changes in the present law, yet he thought they would all be the better of carefully considering it, and to a certain extent relating each other's experiences. He had not himself read the Blue Book, and in speaking of it might differ from what he would say had he carefully considered the matter. He could not agree with Dr. Anderson in his proposal that the Sheriff's order should be done away with. No doubt medical men had great trust in one another, and felt confident that certificates would not be granted on insufficient grounds; but he knew sufficient of the outer world to be able to say that great distrust would be created could two medical men, without the concurrence of a magistrate of the Crown, confine any one as a lunatic. A justice of the peace would not be a good substitute for the Sheriff. They all knew many justices of the peace, and there was no doubt that many of them were unfit to judge of two medical certificates and report upon them. He did not know how they got on in England, but for his part he would rather trust the Sheriff and his substitutes than the justices of the peace. One thing struck him during his residence at Larbert, viz., the difficulty of getting an imbecile who had been sent to an asylum certified as recovered, after the attack of violence or excitement had passed off. On one occasion he was asked by Dr. Frederick Skae to get a woman out of the Stirling Asylum. She could earn 14s. a week at a coal pit, but unfortunately got into a condition in which young women left to themselves are apt to fall. When delivered of her child, she boarded it with a neighbour, who, on one occasion, would not allow her to see it. A fight ensued, which was reported to the Fiscal, who placed the imbecile woman in the asylum. She soon became calm, and he and Dr. Skae signed a certificate that she was fit to leave the asylum, but they added a postscript to the effect that the woman would require to be looked after. The Sheriff held that this vitiated the whole certificate,

and refused to sanction her discharge. This case illustrated the difficulty of getting an idiot or a harmless lunatic out of an asylum. He thought also that medical men were apt to forget that in signing the usual certificate, they certified that the person was *not only insane*, but a fit and proper person for treatment in an asylum.

Dr. TUKE said that the discharge of unrecovered patients was one of the most important considerations a Superintendent had to deal with. Patients might be harmless to the general public, yet not so to the family circle, whose whole peace and comfort they might completely upset. To send two medical men who knew nothing of the case to an asylum to report as to the recovery or fitness for discharge of a patient was a very unsatisfactory mode of going to work. He knew of a case in which two eminent medical men were sent to an asylum to certify as to the condition of a gentleman confined there. They certified that he was to all intents and purposes free from delusions, and that they believed he was sane. The same night he killed a cat because it was full of electricity. He thought such certificate should be granted by the Commissioners in Lunacy. They were likely to know something of the cases that would be brought before them. With respect to the Sheriff's order, he concurred with Dr. Ireland. He would not like to see it supplanted by one from a justice of the peace. He thought that the Sheriff's warrant was a comfort and safeguard to every person concerned. He should be very sorry indeed to see the power of sending any human being to an asylum vested in the hands of some J.P.'s he knew. He thought also that the Superintendent of the District Asylum should be the inspector of all the lunatics in the district.

The CHAIRMAN desired to know how far they were authorised to send out a patient on the plea of improvement?

Dr. RUTHERFORD said there was a clause in the Act (17 section of Act 25 & 26 Vict., cap. 54) which enabled a Superintendent to compel the discharge of any patient whom he could certify as harmless to himself and others, and no longer fit for asylum treatment. He had discharged several patients under this provision. If the Inspector of Poor refused to remove the patient application would have to be made to the Board of Lunacy, but this he had never found necessary.

Dr. ANDERSON explained with reference to his views as to justices of the peace granting the warrants, that in their case they might be able to certify to something real. The Sheriff's warrant would be preferable if it would relieve them of responsibility. His objection to the present system was that notwithstanding the Sheriff's warrant, a medical man might be dragged into a court of law on account of the certificate.

Dr. RUTHERFORD said he considered the safeguards in Scotland, where two medical certificates and a warrant from the Sheriff, a responsible officer of the Crown, were required, were very much greater than in England, where on one medical certificate and a Justice's order a patient could be confined in an asylum, or on two medical certificates and the order of a relative.

Dr. CLOUSTON said he quite agreed with all the speakers who had spoken as to the excellence of Dr. Rorie's paper. It was of importance that they should discuss the questions raised in it at the present time. At the general meeting of the Association in London there was a very general feeling that something would come out of the evidence given before this Commission. If they as Scotch medical men practising in lunacy wanted any amendment made in the law, now was the time to make suggestions. Taking Scotland, where there were a large number of medical men deeply interested in the Lunacy Law, they found that there was only one practitioner that gave evidence before the Committee. There was one point on which he had had practically a difficulty. A certificate of emergency was signed in the Island of Skye on the 14th day of a given month, and the patient was brought to the

Metropolitan Asylum on the 20th of the month. Now, was he justified in admitting that patient or not? If he had been brought a month after the certificate was signed was he justified in admitting him? He felt that he was in an extremely responsible position, as he had no means of ascertaining the requirements of the law on the matter. They ought to know how long a certificate of emergency could remain in force before a person entered an asylum as well as after he got there. Another point to which Dr. Rorie alluded was the question as to the medical men giving certificates to patients coming into their own asylum. He had a strong opinion on that point. While he admitted that it was theoretically a wrong thing that a medical man should certify a person into his own asylum, yet, as there was no objection to it on medical grounds, the convenience of the practice was so great, and the knowledge that could be got was great, it would be detrimental if the plan were abolished. Dr. Rorie spoke of the possible repetition of a certificate of emergency. He himself had recently the case of a patient sent into Morningside on a certificate of emergency. By the carelessness of the poor-law officials it lapsed before the Sheriff's order was sent to him, and the patient was sent back on another certificate of emergency. He did not happen to be in at the time, but his assistant received the patient. He wrote to the poor-law people saying that he would only detain the patient for 24 hours longer, but he would never receive another patient on a renewed certificate of emergency. He thought that probably most of them would take this view. In a general criticism of the Lunacy Law, he would say that the provisions for the admission of patients into Scotch asylums were all very admirable, and were much better than the provisions of the English Lunacy Law. They were more consistent, better for the friends of the patients, for the patients themselves, and the asylum superintendent; but he did think that the English law made better provision for the discharge of pauper patients than the Scotch law. His experience had not been that of Drs. Rorie and Rutherford, as to the efficiency of the clause of the Scotch law that had reference to communicating with inspectors of the poor in regard to the discharge of harmless unrecovered patients; and he thought there should be more definite provision for discharge. He thought that such cases were proper ones for the direct interference of the Board of Lunacy, and that when a patient was sufficiently harmless to be discharged, the Board and the Superintendent ought then to have power to discharge, and that it should not depend on the inspector at all. The asylum should have power to summon the Inspector, and hand over the patient to him, and he should be then responsible for the patient. Dr. Rorie's criticism of the Scotch Law as to the difference in its provision between asylums and poorhouses was new, and had great force. The idea that patients in asylums should be recertified every year after three years, and that this should not be required in lunatic wards of poorhouses was absurd both in law and justice. In regard to the necessity for an independent authority, such as a district inspector would be, he confessed that, to his mind, such an officer was not needed. They at present had an asylum medical officer, and they had the Board of Lunacy, an independent authority created by Government, receiving pay from Government, and representing the public generally. He did not see what would be the functions of an intermediate inspector or officer as between those two officials. He could not, for his part, see that he was required. He thought that the Board of Lunacy might have some more power in regard to the Inspectors of the Poor as to such points as he had mentioned and others, and in that case there would be no use for an independent person being appointed. He thought they all agreed with Dr. Rorie that English and Irish certificates should be valid in Scotland. It was indeed a monstrous thing that men practising over the border should not have the power of giving valid certificates for our asylums. He never saw a medical man who did not think that that was a most absurd interpretation of the law. A renewal certificate every three years was an unnecessary piece of legislation; and in any consolidation

of the Lunacy Law it should not be reintroduced. They all found it to be quite useless. There was one provision in regard to the discharge of recovered patients which existed in England, and which he thought they would be much the better for in Scotland. They knew that many of the patients who recovered had nowhere to go to, and that by our law no person was bound to receive them. The Inspector of Poor had taken charge of the patient before his admission, had taken means of sending him into the asylum, and delivered him into their care and custody. But after he was recovered and required looking after—poor and friendless in a part of the country distant from his home—and when care might make all the difference as to his relapsing into insanity or his remaining well, there was no means of handing him over to a competent authority. He had often written to inspectors of poor in regard to such persons, and they would take no steps, which the Relieving Officers in England were bound to do.

The CHAIRMAN—I write to the Inspector, and he comes and takes out the patient. In no case have I sent out a patient otherwise.

Dr. CLOUSTON—What I have stated is my experience of the matter.

Dr. IRELAND—Is that not owing to the difference between the English and Scotch law? The Scotch law will not provide for an “able-bodied” man.

The CHAIRMAN—It is the Inspector’s petition that puts him in the asylum, and I hold that he is bound to take him out. If he refused to do so, I would write to the Commissioners.

Dr. CLOUSTON—What could the Commissioners do?

The CHAIRMAN—They would compel the Inspector to give his authority to discharge.

Dr. CLOUSTON—We have the authority to discharge, and to turn a man out to the street, but that might be an extremely unwise and dangerous thing. Say that a young girl has recovered, and you have the choice of turning her out to the street.

The CHAIRMAN—What is your practice, Dr. Howden?

Dr. HOWDEN—My rule is to write to the Inspector, and the Inspector sends the relatives.

Dr. IRELAND—But if there are no relatives?

Dr. HOWDEN—Then the Inspector gives directions as to the disposal of the patient. He generally directs me to send the patient to the inspectors of the parishes where they belong, and pays the travelling expenses.

Dr. CLOUSTON said he would not take up much more of their time, but his remarks might lead to discussion. Another point he would like to refer to, namely, that in any improvement or alteration of the Scotch law, there ought to be a provision for the performance of *post-mortem* examinations in difficult and anxious cases by an officer outside—by some recognised medical man holding an official position—to take away the responsibility from the asylum Superintendent, to put him right with the general public. There was another matter which, as it was just about to happen to himself as a personal experience at Morningside, he would like to mention, as he considered it to be a defect in the Scotch law. The parish of South Leith had lunatic wards in connection with their poorhouse, and they provided in that way suitable accommodation for a number of harmless incurable cases. That morning he had received a letter stating that the Board of South Leith had decided that no longer were they to keep those patients, and on a certain day a great number of cases suitable for a poorhouse were to be sent to a large asylum which was overcrowded, and primarily intended for cases of a hospital and curable nature. He was extremely puzzled to know what to do in the matter, what resort to take, and whether there was any power that could prevent this happening, or how to meet it when it did happen. It was a most serious and inconvenient thing that such a step should be taken, and that the insane suitable for a poorhouse should be sent to an over-full asylum at the whim of the majority of a Parochial Board, without any proper

central authority interfering. He thought that the General Board of Lunacy should have power to interfere in such a case. Dr. Anderson was the very first Scotchman he had heard express an opinion that the Sheriff was not a proper person to give an order to send in patients to asylums. His own ten years' experience in England was such as made him most strongly in favour of the Scotch procedure. If Dr. Rorie had been present he would have asked him his ideas as to the mixed, lay, and medical superintendents, which he proposed in asylums. He thought that if they once gave up the principle in their asylums that there was to be one head and central authority, and that central authority a medical man, they performed a most retrograde step (hear, hear). By far the majority of the great improvements that had taken place in asylums of late years, were all in consequence of the advance of medical ideas. They must protest against any kind of lay or other authorities stepping in between themselves and their patients in an asylum. Certain medical men might not have the organising faculty to a great extent, but still he believed they would make better superintendents on the whole than non-medical men. He would not object to the establishment of small asylums on the principle of those at Banff, Haddington and Elgin, as experiments suitable for local wants. And he thought they should encourage general freedom of action and experiment, but in regard to the larger institutions, that really governed the Lunacy policy of the country, the question was one on which there should be no dubiety.

The CHAIRMAN—I should like to make a remark about the emergency certificates. I do not think that they should come into force till the person comes into the asylum, and that then they should last for three days. They should then be given by the superintendent of the asylum, who ought to have a say in the matter. I never knew of a certificate not dated at the time the patient came to the asylum. If an old one exists a new one should be signed when a patient enters the asylum.

Dr. HOWDEN—My idea is that the certificate expired three days after it was signed, and I think it comes into force when the person requires to be taken in charge.

Dr. TUKE—The certificate of emergency lasts for 72 hours after the admission of the patient, irrespective of the date at which it was signed.

Dr. WALLACE said it was a most remarkable thing that was mentioned in Dr. Rorie's paper as to the large number of patients who were admitted into the Dundee Asylum on certificates of emergency. The same thing occurred in his district, and he thought these certificates were sometimes granted where they ought not to be granted at all. They were often granted in consequence of the expense arising in the case of a supposed lunatic falling into the hands of the police. The police gave information to the Procurator-Fiscal, who was not long in running up a bill of from £20 to £30. It was the interest of the Inspector of the Poor to get the patient out of the hands of the Procurator-Fiscal, and the consequence was that a person labouring, it might be, under the effects of an extra glass of liquor, or a person in want of food wandering about the streets for two or three days, was taken by the police and certified by some facile medical man as insane. The person so certified might, after being properly cleaned, fed, and so forth, be in a state to be sent out, and not need to come under the cognisance of the Commissioners at all. He thought it was a very unsatisfactory state of matters that any police inspector, or inspector of the poor, should be able to get a certificate of emergency on grounds so futile as those he had mentioned. Dr. Rorie specified so many matters of interest, that it was almost impossible for one to state his opinions on most of them. But he did not agree with Dr. Anderson as to the functions of the Sheriff in granting certificates. He thought that the power exercised by the Sheriff was a very great safeguard to the patients, to the friends, and to the medical men. In the district from which he came, the Sheriff had, within the last few years, in order, he supposed, to admit of his

getting away on a holiday, appointed two laymen as his substitutes, men of position, and able to decide on the competency of the certificates as well as the Sheriff himself. So far as his observations had gone, these gentlemen had exercised that function in a very satisfactory manner indeed. Then, with reference to the point as to whether for the discharge of a lunatic, the medical officer of an asylum was not so competent for discharging the patient as two medical men appointed by parties interested in the patient, he agreed with the gentlemen who had already spoken that the medical officer connected with the asylum was the proper party. As an instance of the danger of employing medical men having nothing to do with the treatment of lunacy or with the management of asylums, he might mention a case which occurred in his private practice a few years ago. The case was that of an English barrister, who became dangerously insane. He was a man of very considerable ability—a man who had devoted himself to the higher mathematics, and subjects of that description. He was a great friend of the late Sir William Hamilton, and was of such subtle intellect, that he baffled every medical man that came into contact with him, or who was sent by parties interested to see whether he was fit to be put into an asylum. It was only through his committing an assault, and on it being discovered that he was going about with a pistol, that a medical man was got to sign a certificate. He himself was that person, and knew the case thoroughly. But there were many points of dubiety in the case. He was not long in the private asylum till he sent a letter to a medical friend in Glasgow. That medical man visited him, and, not knowing the points as to which the patient was unhinged, he was deluded by him. The consequence was that he got a professor in the University to go and see him, and thereby they got him discharged. However, he believed that the manager of the asylum was convinced of the man's insanity, and one of the Commissioners had examined him, and declared him to be insane, and recommended that he should be transferred to an asylum, where he would have an opportunity of mingling with persons of the same condition of life as himself. He was ultimately discharged, and resided in Edinburgh; but he troubled the Commissioners so much at their office, and, he believed, threatened to make an onslaught on the secretary, that the door-keeper was ordered to call in the police the first time he presented himself. Having become aware of these intentions, he went to London, and resided in his chambers, but he went from bad to worse mentally, till he became a perfect waif, wandering about the Strand, where his peculiarities frequently attracted notice. One day he was dressed in a very peculiar style, and a gentleman passing by made a remark about him, when he turned about and committed an assault upon the gentleman. He was taken up and tried at one of the police courts, and afterwards confined to an asylum. That was a case in which, on the opinion of two medical men, an insane patient was about to be set at liberty. Then as to the important question as to whether asylums could be managed by a medical officer conjunctly with lay residents or not. He himself being a visiting medical officer and not resident in the asylum, had a personal interest in the question, and he thought that the views of Sir James Coxe and Dr. Arthur Mitchell were such as to commend themselves to his mind. He thought, however, that no hard and fast line could be drawn in such a case. An asylum containing 200 patients and upwards, could only be managed by a medical superintendent. His view was that a medical man in active practice in a district having his eyes and his ears open, and coming into contact with all and sundry, was much more likely, within certain limits, to manage his patients to their own advantage as well as to the advantage of their friends, than a man who was practising in the asylum and receiving patients from an enormous area. He knew of two parties who would, certainly within the next fortnight, come under the charge of some medical man in connection with an asylum, and that arose from his knowing the general population. From hearing the gossip in the profession, and so forth,

he knew what the history of the parties was; and if they were coming under his care he would be able to manage them better than a man at Gartnavel or Morningside, who had not a knowledge of those things.

Dr. ANDERSON said he should like to explain as to the Sheriff's warrant, that his opinion on the matter had been formed chiefly on account of the Wilson case.

The CHAIRMAN said he thought that the meeting had already expressed their opinion fully as to their preference for the Sheriff's warrant rather than one by the justice of the peace.

Dr. CLOUSTON said it was quite clear that there were many of the members whose opinions would be very valuable, who had not fully considered the contents of the enormous Blue-book, and he thought they should therefore adjourn the discussion till the next meeting in Glasgow.

After some conversation, Dr. Clouston's suggestion was agreed to, and the Secretary was requested to endeavour to get some gentleman to bring forward a paper on the subject, as a basis for discussion.

A vote of thanks to the President and Fellows of the Royal College of Physicians, for the use of their Hall, terminated the proceedings.

DR. C. LOCKHART ROBERTSON ON COUNTY LUNACY ADMINISTRATION.

The following letter from Dr. C. Lockhart Robertson appeared in the "Times," of March 22nd. It seems to us to contain most important suggestions of a highly practical kind, and we hope the Government may embody them in its Bill on the subject:—

TO THE EDITOR OF THE "TIMES."

SIR,—One of the important duties which will devolve on the new County Boards will be the administration of the county lunatic asylums. I venture, therefore, before the County Government Bill goes into Committee, to ask your attention to one important financial question relating to the maintenance of the insane poor—viz., the grant to the unions from the Consolidated Fund of 4s. a week for each lunatic confined in the county asylums. When the Chancellor of the Exchequer in 1874 proposed this grant he was careful to inform the House that it was of a temporary and tentative kind, and a relief to the landed interest until such time as the promised measures relating to local government and local expenditure were matured. The County Prisons Bill—the first of these measures—is law, and in my humble judgment is a wise and sound financial measure. This County Government Bill is the next instalment of local financial reform, and under its provisions ought, I think, to be included the permanent adjustment of this grant of 4s. a week to each lunatic in the county asylum—a grant amounting last year to £380,000; while if the recent very influential deputation which waited upon the President of the Local Government Board were successful in procuring its extension to the lunatics in workhouses it would soon be doubled.

When this grant was first proposed by the Government you permitted me in a short letter in the "Times" to express a fear that the union authorities might be tempted by the 4s. profit to fill the county asylums with the chronic lunatics detained in the union houses, and that thus this grant—given in relief—would ultimately increase the charge on the county rate by the required extensions of the lunatic asylums. Practically throughout the county asylums I have observed such unnecessary filling up of the wards by incurable lunatics and imbeciles from the workhouses to have been steadily and needlessly practised. In the report of the Lunacy Commissioners for 1876, I find this opinion confirmed. "It seems probable (they state) that the pecuniary advantage to unions

arising out of the Parliamentary grant of 4s. per head per week for every pauper patient maintained in an asylum has in some counties contributed to increase the number in these institutions by the removal thereto of many patients who but for such inducement would have been retained in workhouses." So again Mr. Selater-Booth, in his 16th report of the Visitors of the Haywards Heath Asylum, writes:—"There are 43 more patients in this asylum than there were a year ago. In any enquiry into the causes which may have contributed to this increase the Committee consider that the action of the Government in making an allowance of 4s. per week to the several unions for every pauper lunatic in the asylum ought not to be lost sight of."

The opportunity to which the Chancellor of the Exchequer looked of placing this 4s. tentative grant towards the county lunacy expenditure on a sound and permanent basis is offered in this County Government Bill. The suggestion I venture to offer is that the amount of the grant instead of going to the union guardians be paid by the Treasury to the new County Boards, to be applied to the payment of two important items in the county asylum maintenance rate—viz., the salaries, wages, and pensions, which now average under 3s. per week; and, secondly, the repairs, alterations, and future extensions of the fabric, which the remaining shilling of the 4s. grant would amply cover. The several unions would thus receive a permanent reduction of 3s. a week on the asylum maintenance rate, which would then average from 6s. to 7s., while the county rate would be directly relieved of the large sums yearly spent on repair, alteration, and enlargement of the asylum fabric. Thus, when the original cost of construction extended under the Act of 1845 to 30 years is once paid off, the care and treatment of the insane poor would no longer be a yearly item in the county expenditure, and the unions would have their lunatics treated and cured for the small charge of 7s. per week. So altered and applied, the Government grant of 4s. from the Consolidated Fund would be a direct and permanent relief to the county expenditure, and the needless crowding of the asylum wards with chronic and imbecile cases would cease.

Should this proposal find favour with the Government and the House, I would add one further suggestion, which would moreover meet the views of the important deputation of the Medico-Psychological Association which last week had an interview with Mr. Selater-Booth. According to my proposal the salaries, wages, and pensions of the staff of the county Asylums would be defrayed from the 4s. grant from the Consolidated Fund. Following the analogy of the Prisons Bill (as also of the Poor Law administration) I would suggest that the Government, as represented by the Lunacy Commissioners, should control the appointment and discharge of their officers and servants by the Lunacy Committee of the new County Boards, as also the grant of superannuation pensions under the Lunacy Acts. The fixity of tenure—especially as regards the medical superintendent—of office which this control of the Lunacy Commissioners would imply can hardly be over-rated in its influence on the well being and good management of the county asylum. Again, the fears expressed by the deputation of the Medico-Psychological Association as to their superannuation allowance would be allayed by my proposal to transfer this charge from the asylum union rate to the grant from the Consolidated Fund.

I am, Sir, your obedient servant,

C. LOCKHART ROBERTSON.

Athenæum Club, March 9.

TEARLESS MADNESS.

As an example of the rubbish that passes current in even Medical Journals for Medico-Psychological facts, we quote the following annotation:—

"One of the most curious facts connected with madness is the utter absence of tears amidst the insane. Whatever the form of madness, tears are conspicuous by their absence, as much in the depression of melancholia, or the excitement of

mania, as in the utter apathy of dementia. If a patient in a lunatic asylum be discovered in tears, it will be found that it is either a patient commencing to recover, or an emotional outbreak in an epileptic who is scarcely truly insane; while actually insane patients appear to have lost the power of weeping: it is only returning reason which can once more unloose the fountains of their tears. Even when a lunatic is telling one in fervid language how she has been deprived of her children, or the outrages that have been perpetrated on herself, her eye is never even moist. The ready gush of tears which accompanies the plaint of the sane woman contrasts with the dry-eyed appeal of the lunatic. It would, indeed, seem that tears give relief to feelings which when pent up lead to madness. It is one of the privileges of reason to be able to weep. Amidst all the misery of the insane, they can find no relief in tears."—"Brit. Med. Journ.," Dec. 15, 1877.

UNIVERSITY LECTURERS ON MENTAL DISEASES.

The Scottish Universities Commission has just issued its Report, and among the recommendations one is that Lectureships on Mental Diseases should be instituted in the Edinburgh, Glasgow, and Aberdeen Universities.

THE LATE MR. GEO. P. BACON.

We have heard with much regret of the death of Mr. G. P. Bacon, of Lewes, who has since 1868 printed this Journal. His connection with the Journal was not merely commercial, for he took a personal interest in doing the best he could for it, and spared no pains to bring it out punctually and in a way to satisfy the Members. As a man of education and literary ability he had an interest in producing the Journal in the best form, and his co-operation was always appreciated by the successive Editors. He was widely known and greatly esteemed.

Appointments.

ATKINS, R., M.D., C.M., has been appointed Resident Medical Superintendent of the Waterford District Lunatic Asylum, vice Connolly, deceased.

BROWN, J. J., M.B., F.R.C.P.Ed., has been appointed Medical Superintendent of the Fife and Kinross District Lunatic Asylum, Cupar, vice Fraser, appointed a Deputy Commissioner of Lunacy in Scotland.

CRADDOCK, F. H., B.A., M.R.C.S.E., L.S.A.L., has been promoted to be Senior Assistant Medical Officer and Deputy Superintendent of the Worcester County and City Lunatic Asylum, Powick, vice Cooke, appointed Superintendent of the Wiltshire Lunatic Asylum.

COOKE, E. M., M.B., M.R.C.S.E., has been appointed Medical Superintendent of the Wilts County Lunatic Asylum, Devizes.

GRIFFITH, J. De Burgh, B.A., M.B., M.Ch., has been appointed an Assistant Medical Officer to the Worcester County Asylum, vice Craddock, promoted.

HARVEY, C. W., M.B., has been appointed Second Assistant Medical Officer to the County Lunatic Asylum, Brentwood, Essex, vice Burtonshaw, resigned.

ROBERTSON, W. S., M.B., C.M., has been appointed a Second Assistant Medical Officer to the County Asylum, Fareham, Hants, vice Thomson, resigned.

RUSSELL, A. P., M.B., late Assistant-Physician to the Crichton Royal Institution, Dumfries, has been appointed Medical Superintendent of the Lincoln Lunatic Hospital.

PATTINSON, H. B., M.R.C.S.E., L.S.A.L., has been appointed Assistant Medical Officer to the Ipswich Lunatic Asylum.

PHILLIP, Dr. J. A., of Lincoln Lunatic Hospital, has been appointed Superintendent of the new Private Asylum at Mavisbank, Edinburgh.

TANNER, L. J. N., L.R.C.P.Ed., L.R.C.S.Ed., has been appointed Assistant Medical Officer to the Cork District Lunatic Asylum, vice Atkins, appointed Resident Superintendent of the Waterford District Lunatic Asylum.

TURNER, H., M.R.C.S.E., L.S.A.L., has been appointed Medical Superintendent of the Bethel Hospital for the Insane, Norwich, vice Mercier, resigned.

WHITE, E. W., M.B., M.R.C.S.E., L.S.A.L., has been appointed Assistant Medical Officer to the Kent Lunatic Asylum, Chartham.

ON account of the pressure on our space we have been compelled to let several original articles and some other important matter stand over. We have made arrangements to begin the publication in our next number of Drs. Eulenburg and Guttmann's Essay on "The Physiology and Pathology of the Sympathetic System of Nerves," to which the Astley Cooper prize for 1877 was originally awarded.

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PART 1.—ORIGINAL ARTICLES.

Physiology and Pathology of the Sympathetic System of Nerves.

By Dr. A. EULENBURG, Prof. of Medicine, Univ. of Greifswald, and Dr. P. GUTTMANN, Privat Docent, Univ. of Berlin. Translated by A. NAPIER, M.D., Glasgow.*

Part I.—PHYSIOLOGY.

Cervical Sympathetic Nerve. I. Experimental Observations on Animals with Results. A. Oculo-pupillary Branches.—The experimental investigation of the functions of the Cervical Sympathetic Nerve begins, as is well known, with Pourfour du Petit,† who, in the year 1727, showed that it exercises considerable control over the movements of the pupil.

These facts were again discovered by Biffi,‡ in 1846; he found that division of the cervical sympathetic in rabbits and dogs resulted in *contraction of the pupil*, while irritation of the peripheral end of the divided nerve produced *dilatation*. We know, further, that the pupil, contracted by division of the sympathetic, is capable of being again slightly dilated by means of mydriatics, such as atropine (Budge,§ Valentin||). The explanation of this observation, according to the general acceptation, is that in the course of the cervical sympathetic certain branches are given off which supply the musculus

* It should be stated that it was for this Essay that the Astley Cooper Prize for 1877 was originally awarded to Drs. Eulenburg and Guttmann—a decision, however, which was subsequently overthrown on the technical ground that the paper was the work of *two* authors, and not of one only—as the terms of Sir A. Cooper's will seem to require. This essay having been handed in in October, 1876, there are no references to any papers on the subject written since then.

† “Mèm de l' Acad. des Sciences,” 1727, p. 1.

‡ *Intorno all' influenza che hanno sull' occhio i due nervi grande simpatico e vago.*—“Diss. Inaug.” Paris, 1846.

§ *Bewegungen des Iris.*—“Braunschweig,” 1855.

|| *Versuch einer physiologischen Pathologie der Nerven*, ii., p. 154.

dilatator pupillæ, and that irritation of these produces mydriasis, and paralysing them by division *paralytic myosis*.

As regards the origin of these fibres, Budge* first pointed out that they issue from the spinal cord, for the most part from the region extending from the point of exit of the sixth cervical to that of the second dorsal nerve, which region he accordingly named the *centrum cilio-spinale inferius*.

In the same way also Claude Bernard placed what he called the "*Centre oculo-pupillaire*," at the level of the first and second dorsal vertebræ.

On the other hand, Salkowski† has lately asserted that the Centrum Cilio-spinale must be situated *above the atlas*, as its excitability is not abolished in blood-poisoning by suffocation—(interruption of artificial respiration in rabbits poisoned with curare)—when the cervical portion of the spinal cord is cut through, even when the incision is made above the level of the atlas.

Thus it is certain only that the zone of the spinal marrow, the wounding of which has an influence on the sympathetic pupillary branches, does not extend downwards below the level of the second dorsal vertebra; but at the present time its upper boundary cannot be specified with certainty. Besides the already-mentioned principal centrum, Budge‡ accepted a second, (*centrum cilio-spinale superius*), situated higher in the spinal marrow, which was stated to be connected with the hypoglossus by a communicating filament.

According to experiments just published by Brown-Séquard, to which we shall again refer—the accuracy of which, however, we did not find confirmed to the full extent—we may assume that the sympathetic pupillary branches probably terminate on the surface of the brain.

The connection between the *centrum cilio-spinale inferius* and the sympathetic takes place, as Budge and Claude Bernard have shown, through the communicating branches of the anterior roots of the spinal nerves. Division of these acts on the pupil in the same way as section of the cervical sympathetic itself.

Voisin§ has stated that, besides the connection by means of the communicating branches, still another exists;

* L. c. p. 108, ff. Comptes rendus, T. xxxvi

† "Dissert. Königsberg," 1867. "Centralblatt für die Med. Wissenschaften," 1867, No. 31.

‡ L. c., p. 128.

§ "Gaz. des Hôp.," 1863, No. 10.

certain filaments of the emerging spinal nerves surround the vertebral artery, anastomose with the carotid plexus in the cranium, and so reach the sympathetic root of the ciliary ganglion. That statement, however, is disproved by the following experiments performed by us:—The cervical sympathetic of a rabbit was divided above the spot of entrance of the nerves of the iris rising from the centrum cilio-spinale inferius; then, the edge of the transverse process, bounding externally the transverse foramen, having been nipped off with small sharp forceps, the vertebral artery was exposed and isolated as high as possible towards the foramen magnum, and subjected to the powerful stimulation of an induced current. The pupils did not become in the least dilated; the attempt was equally unsuccessful when the sympathetic was not previously divided, and also in newly-killed animals, in which the oculo-motorius no longer responded to stimuli, whilst irritation of the sympathetic still produced dilatation. Further, no contraction occurred when we cut through the vertebral arteries, or divided with bone forceps the lateral walls of the bodies of the vertebra, together with the contents of the transverse foramen down to the medullary canal. Voisin's assertion can therefore raise no claim to our consideration, especially also as it is quite unsupported by descriptive anatomy.

Some authors (Grünhagen, Salkowski) still doubt the existence of a proper pupil-dilating muscle (*musculus dilatator iridis*). Salkowski also holds that, by reason of the assumed perfect similarity of action of the pupil-dilating and of the vaso-motor branches (see below), these two classes of nerve-fibres must be considered identical,—that the oculo-pupillary and vaso-motor filaments are one and the same. Nevertheless, most authors believe that at least the higher mammalia possess the pupil-dilating muscle referred to, and accordingly also interpret the facts in the way hitherto adopted.

Petit had already observed, with contraction of the pupil after section of the sympathetic, a flattening of the cornea and a dragging of the eye inwards. In 1855 Remak* noticed a raising of the upper eyelid on irritating the cervical sympathetic of animals; and Wagner† and Müller‡, on galvanising the cervical sympathetic of executed criminals,

* "Deutsche Klinik," 1855, No. 27, p. 294.

† "Verhandlungen der Würzburger Phys. Med. Gesellschaft," 1860, Bd. x. p. 11.

‡ *Ibidem*, p. 49.

observed that the eyes were slightly opened. Claude Bernard,* however, was the first who called attention to the fact that contraction of the pupil after division of the sympathetic is constantly accompanied by other symptoms, namely—retraction of the globe of the eye, flattening of the cornea, and decrease in size of the palpebral fissure. These same phenomena, characterised as “*phénomènes oculo-pupillaires*,” he saw also after division of the anterior roots of the two first dorsal nerves, and after section of the spinal marrow at the level of the first and second dorsal vertebræ, that is in the region of the already-mentioned “*centre oculo-pupillaire*.” Irritation of the divided cervical sympathetic, or of the peripheral end of the divided anterior roots, gave the opposite results—prominence of the globe (*exophthalmos*), bulging of the cornea, and enlargement of the palpebral fissure.

As regards the means by which these appearances are produced, the *exophthalmos* following irritation of the sympathetic is usually referred to the action of the smooth (unstriped) muscle of the eye (*musculus orbitalis*), discovered by H. Müller,† and situated in the neighbourhood of the *fissura orbitalis inferior*. This muscle—which, though but slightly developed in man, is an important structure in ruminants—has, as Müller has shown, its nerve-supply from the sympathetic system, from the spheno-palatine ganglion; it throws the globe of the eye forwards, and thus acts as the antagonist of the *musculus retractor*, and, in man, also as the antagonist of the *recti* muscles, so that it certainly can have but little power to alter the position of the eye. Besides these, there are still other smooth, unstriped muscles, discovered by Müller,‡ in the upper and lower eyelids of men and the *mammalia*, which may take part in the enlargement of the palpebral fissure and in the protrusion of the globe; and it may be inferred from the above experiments that they also have their nerve-supply from the sympathetic. Finally, Sappey§ has described certain unstriped muscles as existing in the orbital aponeurosis, which co-operate in producing the *exophthalmos* on irritating the cervical sympathetic.

Some writers also ascribe to the cervical sympathetic

* “*Comptus Rendus*,” 1862, T. lv., p. 382 ff.

† “*Verhandlungen der Würzburger Phys. Med. Gesellschaft*,” 1859. Bd. ix., p. 76. (Sitzung vom 30 October, 1858.)

‡ “*Verhandlungen der Würzburger, Phys. Med. Gesellschaft*,” 1859. Bd. ix., p. 244.

§ “*Sitzung der Pariser Académie des Sciences*,” vom 21 October und 18 November, 1867.

a tonic influence on the voluntary muscles of the eye, and especially several of the fore-mentioned oculo-pupillary phenomena have been connected with this tonic influence. The observation of Petit, that the eye is drawn inwards after division of the cervical sympathetic, is ascribed by Romberg* to disturbance of function of the external rectus muscle—a muscle which has a double motor innervation (from the nervus abducens, and from the ascending branches of the uppermost cervical ganglion), and whose energy is therefore weakened when the tonic force proceeding from the sympathetic is lost.

In the same way Remak† referred the retraction of the upper eyelid in division, and the narrowing of the palpebral fissure in irritation, of the cervical sympathetic to an alteration in the action of the voluntary muscles (the levator palpebrae superioris, retractor plicæ semilunaris, and orbicularis palp.), from which he inferred that they are under the control of a tonic power communicated through sympathetic filaments. Schiff also held the same view regarding the oblique muscles, ascribing to them the exophthalmos occurring on peripheral irritation of the divided sympathetic, since, when they are cut through, no such protrusion of the globe takes place. Thus far, according to Schiff, the oblique muscles conduct themselves exactly like organic muscles, as, after cessation of the irritation, the globe of the eye returns slowly to its normal position. Reference will be made later to several other consequences of injury of the sympathetic, such as disturbances of the circulation, of the intra-ocular pressure, of the accommodation, and of the nutrition of the eye (compare “the vasomotor branches of the eye” and “trophic branches.”)

B. *Vasomotor Branches*.—Although Petit mentioned among the results of division of the sympathetic a reddening of the conjunctivæ, the conclusive evidence on this subject originates with Claude Bernard.‡ Division of the cervical sympathetic produces, as he has shown, (in dogs, cats, rabbits and horses), a dilatation of the vessels of the head and neck on the side operated on, and a considerable elevation of temperature, which, measured in the ear, occasionally amounted to 4° to 6° Celsius, and lasted some time. According to Schiff the eleva-

* “Lehrbuch der Nerven Krankheiten,” 2te Auflage ii., 3 Abtheilung, p. 75.

† “Deutsche Klinik,” 1855, No. 27, p. 294.

‡ Bernard: “Comptes Rendus,” T. xxiv., p. 472; “Gaz. Méd. de Paris,” 1852, pp. 75 and 256; “Recherches Expérimentelles sur le Grand Sympathique,” Paris, 1854.

tion of temperature may reach 9° C.; we, ourselves, sometimes observed differences of 11° C. in rabbits directly after division. On the other hand, electrical irritation of the peripheral end of the divided sympathetic causes the previously dilated vessels of the head and neck to contract, and lowers the temperature even to below the normal point. Claude Bernard explained these appearances by paralysis or irritation of the vasomotor nerves of the head distributed in the cervical sympathetic. The rise in the temperature after division is the result of an increased flow of blood to the part through the dilated vessels; while the lowering of the temperature with irritation is the consequence of contraction of the vessels, and therefore of a diminished arterial blood-supply.

The vasomotor nerves of the head, through the agency of which the vascular-thermic symptoms we are now discussing are produced, have their origin, according to Claude Bernard, in the spinal cord, but not from the same spot as the oculo-pupillary branches. Section of the anterior roots of the two first dorsal nerves gives rise, as we have seen above, to contraction of the pupil, with flattening of the cornea, narrowing of the palpebral fissure, retraction of the globe, but no dilatation of the vessels of the head, no elevation of the temperature of the head; division of the ascending filaments of the thoracic sympathetic between the second and fourth ribs (in dogs), on the other hand, produces only dilatation of the vessels and elevation of the temperature of the same side, whilst the oculo-pupillary phenomena do not appear. Bernard, therefore, came to the conclusion that the centre for the oculo-pupillary and the vascular-thermic filaments of the cervical sympathetic are at different points in the spinal cord, and that the latter branches issue from it at the level of the third and fourth dorsal nerves by means of the communicating branches. This, at least, fixes the lower boundary of that zone of the spinal marrow in which arise those vasomotor nerve-branches which afterwards pass over to the sympathetic nerves. How far upwards this zone continues is in the meantime as undecided as in the case of the oculo-pupillary branches. The opinion formerly held by Budge, that the centre for the vasomotor nerves of the head is situated at the level of the sixth and seventh dorsal vertebræ, must be given up in consequence of the later researches of Salkowski and of Budge himself. Lately certain well-known investigations have placed it beyond doubt that the vasomotor centrum for most parts (in-

cluding the head) is in the medulla oblongata; and, further, not only have Budge's former experiments proved the influence of the pedunculus cerebri on the vessels of the opposite half of the body, but by us also have been defined certain localizable vasomotor districts on the surface of the brain of dogs, in the upper part of the cortical substance of the cerebrum. Thus it is, *à priori*, not improbable that the vasomotor branches distributed in the sympathetic reach their ultimate end in certain spots on the surface of the cerebrum, and this conclusion seems to receive support from a number of observations, by Brown-Séquard and by ourselves, still to be mentioned.

The question has lately risen whether the vasomotor nerves, distributed in the cervical sympathetic, are not, wholly or partly, of a vaso-dilator character. Especially Goltz,* by his researches on the sciatic nerve and lumbar part of the spinal marrow of dogs, has shown that the whole series of phenomena which have hitherto passed for the effects of paralysis, for conditions consequent on a paralysis of vessel-contracting nerves, are produced by a persistent irritation of vessel-dilating nerves. It is obvious that it will completely revolutionize our conception of the functions of these nerves if we regard them as actively-dilating, or, as some authors do, as regulating inhibitory nerves of vessel-contraction—analogues of the inhibitory nerves of the heart. Goltz's results force us to the conclusion that the great peripheral roots, such as the sciatic, by preference or exclusively include such vessel-dilating nerves, and that the corresponding spinal centres really represent centres of vessel-dilatation, not of vessel-contraction. Nevertheless there may be ganglionic centres for vessel-contraction placed in the periphery, in the walls of the vessels themselves, or in their immediate neighbourhood; these may be subject to the influence of the dilating or inhibitory nerves, and may send off excito-motor nerves to the bloodvessels. This latter view seems to find confirmation in the experiments of Putzeys and Tarchanoff,† performed under the direction of Goltz, and also from those of Huizinga‡ on the web of the frog's foot. Those authors, accepting the theory that the vasomotor nerves convey chiefly vaso-dilator impulses, believe themselves also justified in assuming the

* Ueber Gefässerweiternde Nerven. Pflüger's "Archiv. der Gesamten Physiologie," Bd. ix., p. 174.

† "Centralblatt für die Med. Wissensch.," 1874, No. 41.

‡ Pflüger's "Archiv. der Gesamten Physiologie," 1875, xi., p. 207.

longitudinal muscle-cells of the walls of the vessels as the means through which these nerves act, though they have been demonstrated with certainty in only a few, that is, in large arteries.

Here we can touch on this important matter but cursorily, as far only as it stands in immediate relation to our subject. It is true that these investigations, and the conclusions drawn from them by Goltz, referred originally to the vaso-motor nerves distributed in the sciatic, or to those of the hinder part of the body in mammalia; but they strongly suggested a transferring of the argument to the cervical sympathetic, and such a transference has already been attempted by Goltz in a very positive way. The above-mentioned fundamental experiment of Bernard, which showed that division of the sympathetic causes dilatation of the vessels of the head, and elevation of the temperature on the injured side, should, according to Goltz, be thus explained—that by means of the incision the vessel-dilating nerves are brought into a state of persistent irritation! He explained in the same way the unilateral increase of perspiration following division of the sympathetic in horses, and the persistent increase of the secretion of the submaxillary gland following section of the cord. Latterly, also, Claude Bernard and Brown-Séquard have been inclined, at least partly, to a similar opinion; the former, inasmuch as he admitted the existence of vaso-dilator along with vaso-constrictor fibres; the latter, as he accepts the appearances following division of the sympathetic, usually regarded as paralytic indications, as the results of irritation.

Such being the state of this question, we regarded it as our duty to repeat the fundamental experiments on the cervical sympathetic, with special reference to the subject in dispute, and in such a way as to ensure complete clearness and certainty. When we examine the older, and often very shortly described, experiments, it is found that, as a rule, too little importance is attached to the determining of the *time* of the occurrence of the vascular-thermic and other phenomena following irritation or division; thus doubts may arise whether, in such a case as lowering of the temperature following irritation of the sympathetic, one has to do with primary phenomena, or rather with secondary phenomena brought on by exhaustion of the irritated nerve. It is clear that if we regard the increase of temperature after section of the sympathetic as the consequence of a persistent irritation,

we should also look for at least a primary raising of the temperature when a divided nerve is stimulated by electricity, not for a lowering of the temperature. Thus, although Goltz at first observed regarding the sciatic that, in opposition to the general opinion, irritation lowers the temperature of the corresponding foot, Putzeys and Tarchanoff soon afterwards stated that this is preceded by a short initial rise in the temperature. The ordinary method of thermometric observation is, in general, not delicate enough to enable us to settle these questions with precision, because the rising and falling of the quicksilver are much too slow to follow with sufficient certainty a rather rapid change in the temperature of the tissues. We have, therefore, both in our experiments on the sciatic (on which we will not enter here, but concerning which we will only state that they proved entirely opposed to those of Goltz, and in favour of the usual, older view), and in our investigations on the cervical sympathetic abandoned the ordinary thermometer, having used exclusively a *thermo-electric* apparatus—a method of observation much more difficult of application, but one which gives more reliable results.

ORIGINAL EXPERIMENTS.—GENERAL PLAN.

Only rabbits were used in the experiments on irritation and division of the cervical sympathetic, as dogs appear to be badly adapted for that purpose from the proximity of the vagus and sympathetic in the neck; besides, the vascular and thin ear of rabbits is a very favourable part for the observation of temperature, and we know that its blood-vessels have their innervation from the cervical part of the sympathetic.

In determining the temperature of the ear we used the electro-galvanometer constructed by G. Meissner and Meyerstein, a detailed description of which cannot be given here.* The superiority of this instrument is the result not only of its *great sensibility*, by means of which even very small differences of temperature are shown with certainty, but also of the *rapidity* with which adjustment takes place. This circumstance enables us to follow even rapid changes of temperature in the tissues with confidence, and to repeat the observations within very short intervals, generally every five seconds.

* See "Zeitschrift für Rationelle Médecin," Bd. xi.

As thermo-electric elements we placed in the circle two of Dutrochet's* needles, which consist of iron and German silver soldered together lengthways as far as the point, according to Poggendorf's proposal. At the upper end of the needles the metals are separated, to admit of being connected, by means of binding screws, with the thick copper wire of the circuit. The needles are covered with a brown varnish, in order that the assumed currents of heat shall not be disturbed by other currents arising from wetting of the dissimilar metals by the fluids of the tissues.

In using the galvanometer we must in the first place ascertain what difference on the scale corresponds to a known difference of temperature in the needle-elements—for instance 1°C . We connected a sensitive thermometer with each of the thermo-needles, placed them in dry test-tubes closed above by wadding stoppers, and put them in water baths of different degrees of heat. The two thermometers then recorded the difference of temperature which simultaneously existed in the two thermo-needles. The scale being now examined, the difference in the expressions found corresponded to the difference of temperature inside the two test-tubes. Thus we find that one degree Celsius in the elements = 13.8 mmtr. on the scale; or that 1 mmtr. on the scale = 0.0725°C . We must further notice in what direction the scale is altered when the one or the other element is heated. As a test it is sufficient to bring the hand near one of the two needles, when a deviation in a certain direction immediately follows.

The animal being laid on its back, made fast at the feet with nooses, and at the head by means of Czermak's apparatus for fixing the head, the sympathetic nerve in the neck is laid bare and isolated by means of a glass rod pushed under it. Two platinum wires serve as electrodes. The vivisection-board is set obliquely on a stand, the ears hanging downwards through an opening in the board. The one element is to be thrust longitudinally through the ears of the side under examination, and supported by a cramp-iron applied to the tip of the ear; the other element, fixed by a supporter, is exposed to a constant heat, the point being kept at a stated distance from the steady flame of a petroleum lamp. This element must be brought so near the flame that the latter imparts to it the same amount of heat as the

* See "*Physique Médicale*," Paris, 1855, p. 26.

ear to the other element. This is the case when, on completing the circuit, the index of the scale shows no change, but remains stationary (deducting small oscillations presumed to be caused by the periodic, regular movements in the vessels). The irritation of the nerve was accomplished by means of a secondary current from one of Du Bois Reymond's induction apparatuses.

Our *experiments prove that on irritation in the continuity of the sympathetic and of its peripheral cut end there is an *immediate fall in the temperature, which goes on for some time after the discontinuance of the irritation (20-35 seconds), and is followed by a gradual rise; it does not, however, reach its original point.* The maximum fall amounted to 2.6°C. —on faradisation of the same nerve, repeated after a short interval, 1.1°C. more.

We found exactly the same results, which can only be shortly noticed here, on examination of the sciatic nerve of the dog and rabbit. All these experiments speak in a decisive manner against the doctrine of the existence of vessel-dilating nerves in the trunk of the cervical sympathetic or of the sciatic nerves, as both irritation in the continuity and of the peripheral end, after division, always resulted in a primary lowering of temperature, of varying intensity and duration. Further, these experiments also show that the appearances occurring after the division cannot be ascribed to a persistent irritation caused by the incision; the irritation produced by the section is unimportant, inconstant, and very transitory, manifesting itself in the primary lowering of temperature, whilst the long-lasting and considerable rise in temperature is plainly the consequence of paralysis.

In order to establish more exactly the duration of the rise of temperature, after division of the sympathetic nerve, and the circumstances having an influence thereon, special experiments were instituted in which, as the settlement of the point in question involved repeated comparative observations on both sides of the head, the thermo-electric method of estimating temperature had to be replaced by the ordinary thermometric method.

The earlier experimenters appear to have given but very slight attention to this point, and their conclusions regarding it are both vague and contradictory. Claude Bernard states

* The *details* of these and of the other experiments mentioned in this Essay are omitted. (Trans.)

that the difference between the two ears is maintained for weeks, or even for an indefinite period. Schiff, on the other hand, observes that it is only when the animals operated upon (dogs, cats, and rabbits) are kept quietly in stalls that the increase of temperature ($5-9^{\circ}\text{C}.$) and dilatation of the vessels are maintained in the ear experimented upon; if the animals are allowed to run about in the open air, and the ears examined when they return heated from their play, breathing quickly, and with the general temperature elevated, the previously warmer ear of the injured side is found to be $1-5^{\circ}\text{C}$ colder than the other, and its vessels less full. When the animal has rested some time, the former relations of temperature return. The experiments with this end in view, made by us on rabbits, were also at the same time directed to some other points; they proved, in general, that the rise in the temperature of the ear after extirpation of the sympathetic nerve, even when the animals are kept enclosed and at rest, is *not* maintained indefinitely. Rather the difference between the two ears, which might at first amount even to 11° or $12^{\circ}\text{C}.$, became gradually less. In some cases there was not only equality established, but the temperature on the side operated on even sank somewhat below that of the other side, and maintained itself for some time, with certainly not unimportant fluctuations, in this relative position. In one rabbit the flushed and hot condition was passing off only on the eighth day—in another on the second, and more clearly on the following days. Thus the points that presented themselves most prominently for observation were certain relatively small differences between the two sides. If the animals were strongly irritated—as by keeping the mouth and nose closed till dyspnoeal muscular contractions were brought on, or if, by other means, strong movements were produced—not only the temperature on both sides rose, but, *by a further rise in the temperature of the ear operated on, the difference between the two sides was generally increased, rarely somewhat diminished; in the same way, when occasionally the temperature was already high on the side not operated on, the existing difference was usually a little increased by the irritation, rarely influenced in the opposite way.*

Analogous results were obtained by us in a series of experiments on rabbits, in which the cervical sympathetic of one side was extirpated, and the carotid artery of the other side ligatured. Here, also, the temperature on the side on

which the sympathetic was injured was at first appreciably elevated; the difference became gradually less, and eventually the temperature on the other side came to be slightly the higher of the two (by 0.1° — 0.3°C ., on the average)—a change which was noticeable from the sixteenth day.

Extirpation of the sympathetic nerve and ligature of the carotid artery were performed on the same (right) side of a rabbit. In this case the equalising of temperature followed unusually quickly, occurring in a few hours; irritating the animal generally raised the temperature on the uninjured side.

In another rabbit extirpation of the sympathetic and ligature of the carotid were performed on the right side, while on the left the carotid only was tied. Here, too, the striking result was seen, that from the very beginning, immediately after the operation, the temperature of the ear on that side on which there had been division of the sympathetic nerve was, and remained, the lower; the difference was at first but small, but gradually increased, and was most observable when the animal was disturbed.

In connection with this last experiment, it may further be remarked that ligature of the carotid on one side produces, as we have convinced ourselves, a slight lowering of the temperature of the side operated on, amounting on an average to 0.3° — 0.9°C . The fact, therefore, that the temperature of the side on which only the carotid is tied constantly remains higher than that on the side on which the double operation is performed, justifies the conclusion that simultaneous extirpation of the sympathetic prevents the speedy development of the collateral circulation after ligature of the carotid.

With regard to the duration of the oculo-pupillary symptoms, we observed, in a dog in which the united trunks of the vagus and the sympathetic were divided on the left side of the neck, an appreciable contraction of the left pupil four and a half months after the operation.

We may now mention some of the latest and most accurate observations on the *cerebral centra of the cervical sympathetic nerve*, as far as they refer to the oculo-pupillary and vasomotor fibres.

Whilst we were engaged in investigations both on this subject and concerning other vasomotor cerebral centra, Brown-Séquard* published some experiments on rabbits and

* Production des effets de la paralysie du nerf grand sympathique cervical par l'excitation de la surface du cerveau: "Archiv. de Phys," 2 ser., T. ii., No. 6; Oct till Decr. 1875, page 854.

dogs, according to which *irritation of the surface of the brain produced the appearances of paralysis of the sympathetic of the same side*. In the first place it is to be observed that he effected the supposed "excitation" by scorching the surface of the brain with a hot wire; he regards this proceeding as a thermic irritation of the surface of the brain, whereas it plainly acts as a destructive and paralysing agent, at least on the parts of the brain surface most immediately concerned, as we have proved in a large number of experiments, both on the motor regions of the surface of the cerebrum of dogs and on the vasomotor centra of the extremities—the existence of which centra was also demonstrated by us. Further, some of Brown-Séquard's stated results are very indefinite and variable, and some of them very questionable, at least in their explanation. He states that, in his experiments, among the appearances that may be regarded as corresponding to those of division of the sympathetic he observed only *one* that was constant, *the narrowing of the palpebral fissure*, and that only when the injury was done to the right side; on the left side the effects of the burning, as he adds in a note, took a very different form. The other oculo-pupillary and vasomotor phenomena (contraction of the pupil, injection of the conjunctiva, elevation of the temperature of the ear) were more inconstant and less marked than after division of the sympathetic. As regards specially the unilateral elevation of temperature, Brown-Séquard merely remarks that generally the ear on the side operated on is somewhat warmer; the only experiments recorded by him prove differences of only 0.1° and 0.2°C. , on which no great value can be set, at least compared with the important results of division of the sympathetic. Irritation of the middle lobe of the brain produces the appearances most intensely, and more so when stimulated in its median than in its lateral parts; the posterior lobe responds more feebly, and the anterior most feebly of all.

But these phenomena are also sometimes seen, temporarily, in lesions of the scalp, the pericranium, and the meninges; and from that Brown-Séquard infers that he has to do with a reflex action caused by irritation of the sensitive terminations of the trigeminus distributed in the investing structures of the brain. Although our attitude with regard to this question has always been quite different to that of Brown-Séquard—since, after the discovery of vasomotor centres in the cortical substance for the extremities of the opposite

side, we also assumed that there should be analogous local centres, in the neighbourhood of those just mentioned, for the vasomotor nerves of the head distributed with the cervical sympathetic—we thought Brown-Séquard's statements should, in the first place, undergo a rigid examination. We found, however, that their exactness was confirmed to only a very slight extent. It must first be denied that the burning, or (as Brown-Séquard expresses himself) the "thermic excitation," of the surface of the brain is uniformly followed by a contraction of the palpebral fissure on the injured side. One is liable to err in this matter, as the contraction of the skin following a wound in the neighbourhood of the orbit may easily be taken for a slight narrowing of the palpebral fissure. A constant dragging forward of the palpebra tertia in rabbits was seldom noticed by us. In certain cases, on the other hand, we observed, especially after burning in the region of the middle (parietal) part of the almost unconvoluted convex surface of the brain in rabbits, an inequality of the pupils and of the palpebral fissure, and even in the prominence of the globe of the eye on both sides. After such thermic excitation, sometimes immediately, and sometimes a few hours later, the right pupil appeared decidedly more contracted (though still responding to light), the palpebral fissure smaller, and the globe of the eye less prominent than on the left—the uninjured—side. These phenomena certainly admit of a double explanation, especially as they appeared in only a very slight degree; the cause of the unsymmetrical action might as justly be assumed to be an irritation of the unwounded side as a paralysis of the injured side.

In dogs, notwithstanding our exceedingly numerous experiments, we have not observed similar appearances; neither the disturbance of larger parts of the brain-surface by heat, nor the electric or chemical irritation of the same, was followed by decided oculo-pupillary phenomena on the same or the opposite side. As regards the cerebral centrum of the vasomotor fibres of the sympathetic, we have not yet arrived at decided results, notwithstanding the large number of our experiments on rabbits and dogs. The easily-performed experiments on rabbits showed, in partial, unilateral disturbance of the surface of the cerebrum by an iron at a red heat, either no difference, or such a small and variable difference, in the temperature of the ears, that no positive demonstrative value can be attached to them. On

the whole, we noticed, contrary to Brown-Séquard's observations, much more frequently an elevation of the temperature of the ear on the uninjured side; this amounted sometimes to $0.7^{\circ}\text{C}.$, and in one case it rose, four hours after the operation, to $1.7^{\circ}\text{C}.$ It is also noteworthy that in the rabbits operated on for this purpose, after irritation of large parts of the surface of the brain, rotatory movements usually occurred towards the side opposite to that injured.

We will not here refer further to the probable causes of these phenomena, but will only remark that they obviously do not arise from affection of the basilar part of the brain (the pons, pedunculus cerebri, &c.), since, as was proved by autopsy, the thermic irritation reached only to a depth of 1—1.5 mmr. In electric irritation of the exposed brain-surface of the rabbit, and especially in the lateral part of the posterior half of the brain external to the sulcus which runs parallel and near to the superior longitudinal fissure, we obtained, in four experiments, a slight but decided and almost instantaneous fall in the temperature of the opposite ear, amounting to 0.2 — $0.4^{\circ}\text{C}.$; on the irritated side itself there was either a slight lowering of temperature (0.1 — $0.15^{\circ}\text{C}.$) or no change. After the irritation was ended, the temperature rose again quickly to its former level, so that both sides were equal. Although the constancy of this result certainly astonished us, we would not, on account of the smallness of the differences, attribute to them very great importance.

The experiments on dogs gave a really negative result. Disturbance, or electrical or chemical irritation, of those parts of the cortical substance (especially of the parts of the gyrus post-frontalis lying behind the sulcus cruciatus) which, according to our showing, influence the temperature of the extremities of the opposite side, and disturbance or irritation of those other superficial portions of the cortical brain-substance lying more anteriorly, posteriorly, or externally, *leaves the temperature of the ear on both sides equal, or at least nearly unchanged.*

VASOMOTOR BRANCHES OF SPECIAL ORGANS.

1. *Vasomotor Branches of the Eye.*—*Intraocular Pressure.*—The experimental investigation of the functions of the vasomotor nerves of the eye which proceed from the cervical sympathetic, and of their influence on intraocular pressure

(which is of special importance in the pathogeny of glaucoma simplex), cannot yet be said to be complete, the results hitherto obtained being unfortunately somewhat contradictory.

That the conjunctival vessels, at least in part, had their nerve-supply from the sympathetic, was known long ago to both Pourfour du Petit and Claude Bernard, who affirmed that division of the cervical sympathetic excited congestion of the conjunctiva. As regards the vessels of the interior of the eye, Wegner* first found (in rabbits) that division of the sympathetic caused dilatation of the vessels of the iris on the same side, while irritation of its peripheral end was followed by contraction. Division of the trigeminus, indeed, also produced dilatation of the vessels of the iris, but, as Wegner holds, only because the branches coming from the sympathetic, which lie on the inner side of the trigeminus within the cranium, were cut at the same time. The choroidal and retinal vessels also, as ophthalmoscopic investigation shows, are influenced by the sympathetic in the same way. *Division of the sympathetic is attended first by a gradual diminution of the intraocular pressure*, amounting to 4—8 mmtr. (measured by the manometer in the anterior chamber of the eye), which Wegner is disposed to ascribe to dilatation and paralysis of the bloodvessels. In two out of four experiments irritation of the sympathetic produced a slight increase of tension which soon passed off again.

Adamücker† observed, after dividing the sympathetic of cats under chloroform, a diminution of the intraocular pressure of 1—2 mmtr.; this was sometimes persistent, sometimes followed by a secondary increase of tension. Irritation of the cranial end of the divided sympathetic was always followed by a slow increase of tension of 2—4 mmtr.; after remaining some time at this level it began to sink, the decrease continuing after cessation of the irritation, and gradually came back to the normal point. The lowering of the pressure appears at the same time as the dilatation of the pupil and the protrusion of the eyeball, and is brought on by diminution in the blood-supply, as in ligature of the carotid. The preliminary increase of tension probably has its origin, according to Adamücker, in the accommodation apparatus, at least the experiments on eyes under the influence of atropine speak for that view. If the ciliary muscle of cats be, as far

* "Archiv. für Ophthalmologie," xii., 2, pag. 1, 1866.

† "Centralblatt für die Med. Wissensch.," 1866, pag. 561; 1867, pag. 433. "Annales d'Oculistique," lviii., p. 5.

as possible, paralysed by atropine, the pressure within the eye under the influence of atropine is 2 mmtr. less than in the other: thus, division of the sympathetic results, not in diminution, but in immediate increase, of the intraocular pressure; while irritation of the cranial end is followed by decrease, not by increase.

Irritation of the cervical sympathetic sets two apparatuses in action, which, in relation to the intraocular pressure, so oppose each other, that, according as the energy of the one or of the other preponderates, increase or diminution of the pressure follows. The one apparatus, the vasomotor, lessens the pressure; the second, situated apparently in the internal muscles of the eye (in the accommodation apparatus), augments the pressure.

Grünhagen* confirmed part of Adamück's conclusions, but nevertheless endeavoured to explain the primary increase of tension in irritation of the sympathetic by the action of the external muscles of the eye, especially by that of the orbital muscle of Müller. In opposition to this idea, Adamück holds that the cause of the increase of tension can be found only in the contraction of the internal muscular fibres of the eye, especially of Müller's muscles of the choroid, or perhaps of a part of the ciliary muscle. These muscles, probably having their nerve-supply from the sympathetic, are said to draw forward the lens, and thereby to increase the tension in the anterior chamber. Those filaments of the sympathetic whose action is to increase the pressure, do not, according to Adamück, pass through the ganglion ciliare, and in the orbit also they do not lie close to the pupil-dilating fibres, but rather to those of the optic nerve.

Hippel and Grünhagen have come to the conclusion that while those nerve-fibres through which the iris may be made to contract enter the cervical sympathetic about the middle part of its course, most of the vessel-contracting branches of the eye join it at the level of the ganglion cervicale supremum. Thus, when the middle part of the cervical sympathetic is stimulated the majority of the vessels of the eye remain unaffected. The increase of the intraocular pressure, which occurs simultaneously (in cats and dogs), depends, according to Hippel and Grünhagen, on contraction of the unstriated muscles of the orbit, which compress the globe of the eye and hinder the return of the venous blood. On

* "*Zeitschrift für Rationelle Medicin.*," 1866, Bd. xxviii., p. 238.

the other hand, irritation of the ganglion supremum alone produces always a decrease of the intraocular pressure in cats and rabbits—whilst extirpation of this ganglion is followed by an increase. Hippel and Grünhagen further ascribe to the trigeminus an influence on the intraocular pressure, inasmuch as they believe that in it vessel-dilating nerves of the eye are distributed.

The influence of the ganglion supremum was also thus far confirmed by Sinitzin,* that he, after extirpation of this ganglion, always observed injection of the vessels of the fundus oculi on the side operated on. On ophthalmoscopic examination it was found that the choroidal vessels had increased in volume, their anastomoses were more distinct, and the whole fundus of the eye appeared decidedly redder than on the other side. The temperature of the eye was also raised; in the conjunctival sac, and under the capsule of Tenon, the difference amounted to 0·9 to 2·4° C. in favour of the eye operated on.

2. *Vasomotor Branches of the Brain and of its Membranes. Intracranial Pressure.*—The exact relations of the cervical sympathetic to the innervation of the cerebral vessels, and its influence on the intracranial pressure, have not yet been made out with any degree of certainty.

Descriptive anatomy teaches that the numerous nerves found in the pia mater, which follow the vessels in a plexiform arrangement and enter partly with them into the cortical substance, rise, at least partially, in the sympathetic plexus vertebralis, while others certainly come from the efferent cranial nerves, especially the trigeminus. That the sympathetic exercises some control over the cranial vessels is thus at least not improbable. Donders and Callenfelst† noticed contraction of the cranial vessels on irritating the cervical sympathetic. Nothnagel,‡ also, was convinced, through several of his division experiments, that the cervical sympathetic, and especially the ganglion supremum, have a share in the innervation of the vessels of the pia mater. Powerful electrical irritation of the nerves of sensation of the skin produced, in rabbits, a reflex contraction of the arteries of the pia mater; the same occurred also after division of the sympathetic between the superior and middle cervical ganglia, and less markedly after extirpation of the superior ganglion,

* "Centralblatt für die Med., Wissench.," 1871, No. 11.

† "Meissner's Jahresbericht," 1856, p. 348.

‡ "Virchow's Archiv.," Bd. 40, p. 203.

being then discernible only by means of a magnifying glass. Other investigators (Schultz,* Riegel and Jolly†), have nevertheless either quite denied, or at least admitted only in a very modified way, that the sympathetic exercises such a function. Riegel and Jolly found, in division and extirpation experiments, that neither the trunk of the cervical sympathetic nor the ganglion supremum can be said always to include vasomotor branches for the vessels of the pia mater.

Lately Fischer‡ has submitted the action of the sympathetic on the blood-pressure in the arteries of the head, and on the circulation in the brain and its membranes, to an experimental examination. The cervical sympathetic was irritated sometimes by means of the induced current, sometimes by the constant current. Experiments on horses, with Ludwig's hæmato-dynamometer, showed, with faradisation, a pretty regularly occurring increase of pressure in the arteria maxillaris externa, together with increased tension of the arterial walls; irritation with the constant current gave no obvious result. The investigations on the subject of the influence of the cervical sympathetic on the intracranial pressure were carried on in cats, the brain-pressure being taken with the kymographion, through an opening in the dura mater. Faradic irritation of the isolated sympathetic increased the brain-pressure in five cases out of eight; in three cases there was a trifling decrease; the constant current produced either no result, or a very trifling increase of pressure when the circuit was closed. The simultaneous faradisation of both sympathetic nerves was followed, in four experiments, by a preliminary quick increase of brain-pressure, succeeded by a decrease when the irritation was continued; in all four cases convulsions occurred, in the form of clonic extensor-spasms and opisthotonos, which were never observed in unilateral irritation, and which were probably caused by the decrease or cutting off of the arterial blood-supply to the brain.

3. *Vasomotor Branches of the Ear.*—The vessels of the cavity of the tympanum become dilated, as Prussak§ has proved, after division of the cervical sympathetic of the same side. The inference is thus easy, that the variations in the intra-auricular pressure (pressure within the labyrinth) are caused by much the same conditions as those of the intraocular pressure.

* "Petersburger Med. Zeitschrift," 1866, xi., p. 122.

† "Virchow's Archiv.," 1871, Bd. 52, p. 218.

‡ "Deutsches Archiv. für Klinische Medicin," Bd. xvii., Heft i., 1875.

§ "Meissner's Jahresbericht," 1868, p. 410.

C. *Trophic Branches*.—It is exceedingly probable that the cervical sympathetic, in many ways, exerts an influence on the glandular secretions and the nutrition of the head. Whether this proceeds, entirely or partly, from vasomotor fibres, or whether it is to be regarded as quite independent of these, and as the function of special secretory or trophic nerve-fibres, cannot yet be decided with certainty by means of the facts before us. We will, therefore, only shortly notice the most important observations having a bearing on the point.

1. *Salivary Glands* (Glandula submaxillaris, sublingualis, parotis).—In the course of the sympathetic the glands just named receive nerves, irritation of which provokes a secretion, scanty, but rich in its specific elements, and therefore tenacious and often gelatinous.

Since irritation of the sympathetic nerves, as Claude Bernard* first observed, excites contraction of the vessels of the glands, retards the circulation through them, and gives a darker appearance to the venous blood, it might seem most reasonable to unite the vasomotor with the secretion-controlling function, and to trace back the latter to changes in the filtration-pressure in the glandular capillaries, and to the more or less abundant supply of oxygen. Various physiological facts, however, appear to be antagonistic to this view: the secretion caused by irritating the nerves can be produced in glands through which there is absolutely no circulation; and when the discharge of the secretion occasioned by nerve-irritation is artificially impeded the pressure in the excretory duct of the gland may be greater than that in the supplying arteries (Ludwig). The theory that there are special secretory branches for the salivary glands is further supported by Pflüger's discovery that certain nerve-fibres terminate directly in the cells of the glands. This refers both to the glandular nerves distributed in the sympathetic, and to those in the facial and trigeminus nerves; on irritation of the latter, as is well-known, a specifically different, copious, and thin secretion is poured out. In paralysis of the sympathetic branches by curare, and after extirpation of the ganglion submaxillare, there occurs, as Bernard has shown, a continuous (paralytic) secretion, which may be increased by irritation of the organs of taste, but which, on the occurrence of structural alteration of the gland, speedily abates. It has been inferred therefrom

* "Liquides de l'organisme," 1859, f. vi., p. 300; "Comptes Rendus," 1862, ii., p. 343, und "Journal de l'Anat. et de la Phys.," 1864, p. 311.

(Bernard) that the chorda tympani includes certain filaments whose function is to preside over secretion in the salivary glands. It has been proved also by Heidenhain that stimulation of the nerves of secretion, especially of those cerebro-spinal glandular nerves which excite a very fluid secretion, leads to a change of the protoplasmic cells into mucus-cells (by mucus-metamorphosis of the cell contents), and to further division of the newly-formed cells; facts which favour the view that there are special nerves of secretion.

2. *Nasal Mucous Membrane*.—Whether the secretion of the nasal mucous membrane is influenced by the sympathetic nerve, is still doubtful. Prevost,* by electrical irritation of the ganglion nasale, produced a congested state of the membrane; stimulation of the divided sympathetic, however, had not the same result. Vulpian,† also, found that irritation of the spheno-palatine ganglion was followed by increased secretion on the corresponding side of the nose.

3. *Lachrymal Gland*.—Concerning the influence of the sympathetic on the secretion of tears, Herzenstein‡ and Wolferz,§ after carefully watching the effects of irritation, could formulate no definite conclusion; nevertheless, the greater number of Wolferz's experiments would seem to indicate that the sympathetic does exercise some control over the secretion—a theory with which Demtschenko's|| results agree.

The principal nerves of secretion of this gland are derived, however, from the trigeminus, in the N. lacrymalis and N. subcutaneus malæ.

4. *Nutrition of the Eye*.—Valentin,¶ Reid,** Volkmann,†† and others, state that after division of the sympathetic there are changes in the eye analogous to those occurring after division of the trigeminus. Brown-Séquard also has observed, after section of the sympathetic in guinea-pigs and rabbits, a gradual atrophy of the eye of the side concerned. It is generally admitted that this is due chiefly to paralysis of vasomotor or trophic nerve-fibres which join the trigeminus, and are found in the gasserian ganglion and its first division.

* "Meissner's Jahresbericht," 1868, p. 327.

† "Archiv. de Phys. Normale et Pathologique," 1869.

‡ "Beiträge zur Physiologie und Pathologie der Thränenorgane." Berlin, 1868.

§ "Experimentelle Untersuchungen über die Innervationsmenge der Thränendrüse," diss. Dorpat., 1871.

|| "Archiv. für die Gesamte Physiologie," Bd. vi., p. 191.

¶ "Funct. Nerv.," p. 109.

** "Phys. Anatom. and Path. Researches," Edinb., 1848, p. 296.

†† R. Wagner's "Handwörterbuch," ii., p. 621.

Others hold that the so-called ophthalmia neuroparalytica, following section of the trigeminus, is generally but the consequence of the want of protection of the eye against mechanical and other injuries, the result of the anæsthesia of the cornea. We should state, further, that in dogs, in which the united vagus and sympathetic were cut, we could not find, 4½ months afterwards, any trace of ophthalmia or atrophy of the eye.

Sinitzin* has lately attributed to the sympathetic a function almost directly opposed to that mentioned by the above-named authors. He found that after extirpation of the superior cervical ganglion, the cornea of the same side, in comparison with the other, offered considerably more resistance to foreign bodies; while these (particles of glass, &c), on the sound side, produced more or less violent conjunctivitis, pannus, purulent infiltration of the cornea, with ulceration and loss of tissue in the neighbourhood of the infiltration, or violent iritis, and panophthalmitis—the side operated on showed almost none of these conditions. *The neuro-paralytic phenomena in the eye did not appear after division of the trigeminus in the cranium (immediately in front of the gasserian ganglion), if, not long before the operation, or immediately thereafter, the superior cervical ganglion was extirpated.* Even the neuro-paralytic phenomena arising from primary division of the trigeminus—when they had not made too much progress, the cornea being still moist and clear—disappeared entirely in the course of 2—4 days on tearing out the ganglion; even when the morbid changes had become too extensive to permit of perfect recovery, extirpation arrested their progress, and produced a certain amount of improvement. The same thing occurs with the ulcerations on the lips and eyelids after division of the trigeminus. Not long ago Eckhard and Senftleben† repeated these experiments, with results not entirely confirmatory of Sinitzin's statements.

5. *Nutrition of the Brain.*—Brown-Séquard‡ states that within a few months after division of the cervical sympathetic in guinea-pigs and rabbits, he observed atrophy of the corresponding half of the brain. After him Vulpian obtained the same results.

D. *Cardiac Excitomotor Branches.*—In the cervical sympathetic are included certain nerve-fibres which are generally sup-

* "Centralblatt für die Med. Wissensch.," 1871, No. 11.

† "Virchow's Archiv.," 1875, 65^{ter}, Band. p. 69.

‡ "Archiv. de Phys.," 2 Sér., t. ii., No. 6, Octr. bis Dec., 1875, p. 854.

posed to convey influences which *accelerate the heart's action*. These are the cardiac sympathetic branches rising from the cervical ganglia—the N. cardiacus superior from the upper ganglion, the N. cardiacus medius from the middle, and the N. cardiacus inferior from the lower ganglion. All these nerves communicate, by many anastomoses, with the corresponding spinal cervical nerves and with the hypoglossal and vagus. Besides these (according to V. Bezold*) there are certain stimulating cardiac fibres which, arising in the brain, pass through the cervical and upper part of the dorsal portions of the spinal cord to the ganglion cervicale inferius and the superior thoracic ganglion, to be distributed eventually in the tissues of the heart. The belief in such an excito-motor cardiac nerve-system, according to V. Bezold's meaning, stimulating directly from the brain, has been very much debated; against it it has been specially objected that the presumed excitatory influence on the motions of the heart is to be referred entirely, or for the most part, to the vasomotor fibres in the sympathetic, or to the reflex action of the N. depressor (Ludwig and Thiry,† Traube‡, M. and E. Cyon;§ and V. Bezold|| himself has admitted that the vasomotor fibres co-operate in effecting the changes in the heart's action and in the blood-pressure.

Lepine,¶ with Bochefontaine and Tridon, have lately found that irritation of certain spots on the surface of the brain of dogs (gyrus postfrontalis and a part of the gyrus præfrontalis) with a weak induction current gave rise to not only a considerable increase of the pressure of the blood in the crural artery, equal to 7 cm. mercury, but also at the same time to an *acceleration of the heart's beat*. With the vagus nerves intact, and a powerful current, there was, on the other hand, a decrease in the number of the heart's contractions. It thus appears not impossible that there may be, in that situation, a cerebral centrum for the cardiac accelerating branches of the sympathetic nerve, as V. Bezold originally supposed; while it is just as possible, and, according to our formerly mentioned

* "Untersuchungen über die Innervation des Herzens." Leipzig, 1863.

"Centralblatt für die Med. Wissensch.," 1866, No. 32.

† "Wiener Sitzungsberichte," xlix., ii., p. 421.

‡ "Berliner Klinische Wochenschrift," 1866, No. 51.

§ "Centralblatt für die Med. Wissensch.," 1866, No. 51. "Reichert's u. du Bois Reymond's Archiv.," 1867, p. 398.

|| "Centralblatt für die Med. Wissensch.," 1867, No. 2 and 23.

¶ Recherches sur les centres moteurs de l'encephale. "Gaz. Med.," 1875, No. 25.

investigations, even more probable that we have to do rather with simple vasomotor centres situated in the forementioned spots in the cortical brain substance, and that the acceleration of the heart's action following irritation of the centres must be regarded only as the result of the increase of the arterial pressure. Thus, the existence of a cerebral centre for the cardiac excitomotor branches remains, in the meantime, just as uncertain as that of a centre for the oculo-pupillary branches, or for the excitomotor branches of the vessels of the head.

The various inquiries as to the effect of irritation of the cervical sympathetic (especially of its lower part and of the superior and middle ganglia) on the heart, have given but unsatisfactory results; it is only established that, through the ganglion stellatum and the upper thoracic ganglion connected with it, the heart may be made to act more rapidly, or may be set in motion again after having come to a standstill. Cl. Bernard, V. Bezold, M. and E. Cyon, and Schmiedeburg, are all agreed on that point. When considering the functions of the thoracic and abdominal parts of the sympathetic system we will again refer to the possible explanation of these facts, and some others connected with them. Here, in conclusion, it may be mentioned that some authors believe also in the existence of so-called "pressor" nerves in the cervical sympathetic and in the vagus (especially in the ramus laryngeus superior), irritation of which increases tone reflexively, and which thus act in opposition to the ramus depressor of the vagus discovered by E. Cyon (Aubert and Roeber). Concerning the origin and course of these branches comparatively little is known; they may, however, be identical with those nerves which tranquilize reflexively the irritation of the vagus.

II. *Experimental Observations on the Functions of the Cervical Sympathetic Nerve in Man.*—The present observations can naturally refer only to irritation experiments, which were principally conducted on living men by means of percutaneous faradisation or galvanizing of the cervical sympathetic.

Besides these we have some observations on direct irritation of the exposed cervical sympathetic in executed criminals. Fragmentary as these are, they support the view that its functions in men coincide in reality with those discovered in other mammalia. This refers specially to the oculo-pupillary branches, since, as was already mentioned, R. Wagner and H. Müller observed the eyelids opening on electrical irritation

of the cervical sympathetic of executed criminals. With regard to the cardiac excitomotor branches, an observation of Henle's* is of interest; he noticed that, in the case of a man who was beheaded, the movements of the auricle ceased in about 25 minutes after death, and that on applying the wires of an induction apparatus to the peripheral end of the divided sympathetic on the left side, the rhythmic contractions began again almost immediately. Nevertheless, Henle attached no great importance to these facts, because repeatedly, after prolonged pauses, the auricle began again spontaneously to beat.

As regards percutaneous irritation of the cervical sympathetic, Gerhardt† obtained, in one case, a very slight dilatation of the pupil by faradisation and galvanisation, applying the cathode between the inferior angle of the maxilla and the sternocleidomastoid muscle, and the anode to the arch of the palate on the same side. In one case, in which there was a swelling on the right side of the throat, in front of the clavicle, Gerhardt could, by compressing this swelling with his fingers, produce a dilatation of the pupil and a decided lowering of the frequency of the pulse, the latter, most likely, through simultaneous mechanical irritation of the vagus.‡

We have performed many experiments to show the *influence of percutaneous galvanisation on the pupil, the frequency of the pulse, and the blood-pressure* in men, the principal results of which are stated below. In the first place let it be understood that for the point of irritation for the ganglion cervicale supremum (according to Remak) we took the so-called fossa auriculo-mastoidea, for that of the ganglion cervicale medium the neighbourhood of the transverse processes of the 4th and 5th cervical vertebræ, and for that of the ganglion cervicale inferius a point near the transverse processes of the two last cervical vertebræ. That a current of electricity may pass through the cervical sympathetic in galvanising these spots is shown by the researches of Burckhardt§ and Ziemssen|| on the dead body, inasmuch as they, by means of insulated

* Handbuch der Nervenlehre. Braunschweig, 1871, p. 575.

† "Zur Casuistik der Gehirn Krankheiten, Jena'sche Zeitschrift für Medicin und Naturwissenschaft," 1864, I., p. 200.

‡ See "Czermak, Prager Vierteljahresschrift," Bd. 100, p. 30, 1868. "Rossbach, über mechanische vagus—und sympathicus—reizung bei Mediastinaltumoren." Dissert. Jena, 1869.

§ "Ueber die polare Methode, Deutsches Archiv. für Klinische Medicin," 1878, Bd. viii, p. 100.

|| "Die Electricität in der Medicin," 4te Auflage, Berlin, 1872, p. 38.

conducting needles thrust into the sympathetic from behind, and connected at their free ends with the galvanometer, succeeded in proving the transmission of a weak current through the nerve when the external electrodes were placed on the angle of the lower jaw and on the manubrium sterni.

Original Experiments.—Our experiments on healthy persons gave the following results :—

When the anode of a constant battery of 20—40 of Siemens' elements is placed on the manubrium sterni, and the cathode immediately behind and below the angle of the jaw, a slight dilatation of the pupil on the irritated side instantaneously occurs on closing the circuit, followed by a gradually increasing contraction when the current is kept up. Sometimes these phenomena do not appear on the first closure of the circuit, but they are produced distinctly when the current, after being continued for some time ($\frac{1}{4}$ - $\frac{1}{2}$ minute), is interrupted, and again closed; and the same result follows each successive closure. Generally the momentary dilatation corresponding to the completion of the circuit is so slight as to escape direct objective observation; but one may bring it subjectively into view by aid of the Pupilloscope* of Giraud-Teulon, first described by Houdin. The construction of this instrument was suggested by the fact that there are on the retina a number of dispersion-circles whose size and relative distance are correspondingly modified by the slightest change in the diameter of the pupil. At the instant that the electric connections are completed, the dispersion-circles are seen by those qualified for personal observation to be suddenly enlarged; but while the current continues they gradually become smaller. The effect of interrupting the current is very variable; sometimes increase, frequently decrease in size, and occasionally no appreciable change is observed in the dispersion-circles. In some cases, when employing a very powerful current, which is kept up for some time, a persistent and objectively demonstrable dilatation of the pupil occurs, which continues even after withdrawal of the current.† As regards the causes of these phenomena, it may clearly be inferred that the momentary dilatation of the pupil occurring on closing the circuit is due to a convulsive

* See Zehender, "Klinische Monatsblätter für Augenheilkunde," Sept. 1867, p. 276.

† Those patients in whom such proceedings cause giddiness and stupor, and various phenomena in the organs of the senses (Photopsia, &c.), are evidently not suitable subjects for experiment.

action in the sympathetic pupillary branches; and that the inconstant dilatation on interrupting the current, and that which more rarely occurs while the current is kept up, correspond to the galvanotomic stimulation of other motor nerves. The probability of this explanation is increased by the following considerations:—(a) That the results of reversing the current (the anode being behind the angle of the jaw) are much more uncertain; (b), that they generally disappear when the negative electrode is removed from the spot corresponding to the ganglion supremum and placed, for instance, in the neck, on the lower cervical spinous processes; (c), that when the electrodes are applied symmetrically behind and below the angle of the jaw, these phenomena, in the eye corresponding to the cathode, are more marked and constant in their occurrence. Nevertheless, there always remains the objection that the dilatation of the pupil in percutaneous galvanisation originates, not from direct stimulation of the sympathetic, but reflexively from the irritated nerves of sensation in the skin. Claude Bernard has shown (and we found it confirmed by our experiments on animals and men) that a powerful irritation of sensory nerves may produce reflex dilatation of the pupil. In the same way, and oftener on powerfully stimulating the crural nerve with an electric current, we have obtained the same result.

After the prolonged operation of a strong, continuous current, flowing in the above-mentioned direction, we frequently observed, when the circuit was still complete, a fall in the frequency of the pulse, amounting to 4—16 beats per minute in those cases in which the normal frequency was 60—80; and with this was conjoined a decrease, discoverable by palpation, of tension and pressure in the carotid of both the irritated and the non-irritated sides, and even in the radial arteries. The information supplied by Marey's sphygmograph was more exact, especially with reference to the carotid. The typical appearance of the previously normal carotid tracings was strikingly altered, when the galvanic current was passed in the manner before described. The line of ascent becomes more oblique, and deviates towards the right, while the pointed apex almost or entirely disappears. The descending curve which should follow the primary ascending line becomes a broad plateau, 2 mmtr. in length, sometimes horizontal, and sometimes presenting another more or less steep ascent. The end of this portion of the curve, which is at the same time the beginning of the actual

line of descent, is formed by the summit of the first secondary wave, which thus rises to the same height as, or even higher than, the primary wave. The line of descent falls somewhat gradually, and the last (great) indentation in the tracing, with its corresponding line of ascent, is flat or rounded.

These changes are sometimes clearly seen, especially the more oblique direction of the line of ascent, in the radial tracing. On the other hand, there is wanting here the flattening or secondary elevation at the apex, so characteristic of the carotid curve; the apex is more pointed than under normal conditions, and the first secondary wave appears clearly developed in the course of the line of descent. Thus, from these statements regarding the carotid and radial curves, partly corroborative and partly contradictory, it may be conjectured that in the before-mentioned method of galvanisation we have to do with two factors, one acting generally, the other locally. Concerning the first factor there can be no doubt; it is the retarding and the weakening of the heart's action, which show themselves in the decrease in the frequency and tension of the pulse, and graphically in the diminished height and more oblique direction of the line of ascent. The second local force is perhaps to be sought in the influence of the electric current on those vasomotor nerve-fibres of the head distributed in the cervical sympathetic, whereby the arterial tone in the region supplied by the carotid is diminished, and the blood-pressure in the carotid itself considerably lowered. Very specially in favour of this view is the circumstance that when a strong current is sent in a downward direction through the neck, from the vertebral column to the brachial plexus, the same pulse-tracings are obtained (while the circuit is closed) in the radial artery of the irritated side as in the case of the carotid just mentioned. By this method also, as in various other ways in which galvanisation is practised (such as the transmission of a powerful descending current longitudinally in the vertebral column, &c.), a transitory diminution in the frequency of the pulse occurs. We believe that this is caused by a reflex stimulation of the inhibitory nerve of the heart, the vagus; at all events it can scarcely bear any relation to the sympathetic system.

Experiments lately performed by us, using the thermoelectric apparatus formerly described, proved clearly that electrification of the neighbourhood of the cervical sympathetic had a decided effect on the temperature of the correspond-

ing side of the head. When a strong faradic current was passed the temperature of the face, during the continuance of the irritation, sank 0.5 to 0.7°C . When the irritation was effected by means of a constant current, the cathode being in the auriculo-mastoid fossa, there was a momentary lowering of temperature on the same side of the face, whilst with the anode in the same position there was almost no result.

These experiments not yet being concluded, we abstain from giving a more complete account of them.

Rockwell and Beard* have prosecuted some inquiries on living men, concerning the *influence of percutaneous galvanisation of the cervical sympathetic on the vessels of the fundus of the eye*. A current of 10—25 elements was used for 2—5 minutes, the anode being placed in the auriculo-mastoid fossa, and the cathode on the manubrium sterni, or at the side of the sixth cervical vertebra. The results, which coincided exactly with those of our own experiments, were sleepiness, a variable sensation of warmth, changes in the pupil, and lowering of the rate of the pulse. As regards the ophthalmoscopic appearance of the vessels of the eye, three practised observers give quite contradictory statements. One of these† noticed Hyperæmia, followed by Anæmia, of the retinal veins; a second,‡ loading of the retinal veins; a third (Hackley), only a slight contraction of the arteries. We shall not be surprised at the relative unsuccessfulness of these experiments when we consider that, according to Grünhagen and Hippel, probably only the vasomotor nerves of the iris, and not those of the choroid and retina, are supplied by the cervical sympathetic, as was formerly mentioned.

In conclusion, we may here notice *the changes in the secretion of perspiration on galvanising the cervical sympathetic*.

In several cases M. Meyer§ made the important observation that by galvanisation of the cervical sympathetic the secretion of perspiration in the arm is increased. Thus, when the cathode was placed on the ganglion cervicale supremum, and the anode on the transverse process of the seventh cervical vertebra of the opposite side, there was a rise in the temperature of the arm on the side corresponding to the

* "On Medical and Surgical Electricity," 1871.

† Roosa.

‡ Loring.

§ "Berliner klinische Wochenschrift," 1868, No. 23; 1870, No. 22.

cathode, and the perspiration appeared in drops in the palm and on the finger-tips. In our opinion this result is to be ascribed only to currents which, in using the electrical apparatus in the way described, enter the brachial plexus or spinal marrow; we believe that most probably it has no connection with the sympathetic. Further, in a case of ephidrosis of the right side, Chvostek* merely increased the secretion of perspiration on the right side of the face by galvanising the cervical sympathetic (the cathode being placed in the neighbourhood of the ganglion cervicale supremum, and the anode on the opposite side, near the spinous processes of the cervical and upper dorsal vertebræ). On the other hand, Nitzelnadel,† in a similar case of unilateral ephidrosis, produced a diminution in the secretion by galvanising the sympathetic.

THORACIC AND ABDOMINAL PARTS OF THE SYMPATHETIC SYSTEM.

According to their physiological functions, so far as we know them, we can distinguish the following varieties of branches in the thoracic and abdominal sympathetic nerves:—

1. *Excitomotor branches of the thoracic and abdominal viscera.*
2. *Movement-controlling (regulating) branches.*
3. *Vasomotor (or secretory and trophic) branches.*
4. *Sensory branches, acting reflexively.*

I. *Excitomotor branches of the thoracic and abdominal viscera.*

1. *The Heart.*—We have already had under consideration the excitomotor nerves of the heart distributed in the cervical sympathetic; and it has also been mentioned that branches pass from the spinal cord to the upper thoracic ganglion and the ganglion stellatum, and thence enter the cardiac plexus. According to V. Bezold and Bever‡ these branches rise partly from loops of the brachial plexus, and partly from the plexus surrounding the vertebral artery; they were not successful in tracing them back to the trunks of the cervical nerves in rabbits. Schmiedeberg, also, could not find excitomotor nerves in the

* "Wiener med Wochenschrift," 1872, No. 19 and 20.

† "Ueber nervöse Hyperidrosis und Anidrosis," Diss. Jena, 1867.

‡ "Würzburger med. Zeitschrift," 1867, Bd. viii, p. 215; "Untersuchungen aus dem physiologischen Laboratorium in Würzburg," Leipzig, 1867, Heft 2, p. 181.

spinal roots of the first thoracic ganglion in dogs. Besides such branches as are of uncertain origin, the trunk of the sympathetic in its whole length, as far downwards as the lumbar region, contains fibres the irritation of which accelerates and strengthens the contractions of the heart, as Budge and Donders have shown in frogs, and V. Bezold in rabbits. Von Bezold also regarded as excitomotor those filaments which, issuing from the thoracic and lumbar parts of the spinal marrow, pass upwards in the trunk of the sympathetic, and eventually emerge from the uppermost thoracic ganglion as *Nervi cardiaci inferiores*. Nevertheless this, as we now know, is not the correct view; they are rather regulating fibres, conducting impressions centripetally, and acting in a reflex way on the vagus nerve.

2. *Stomach and Intestines*.—Nothing is known with certainty regarding the influence of the sympathetic on the movements of the stomach. The peristaltic movements of the intestines, on the other hand, though automatically excited through the parenchymal ganglia, seem capable of receiving accelerating influences from the thoracic and abdominal parts of the sympathetic system. The inhibitory nerves of peristaltic action, afterwards to be considered, appear to run in the trunk of the splanchnic nerve; at least one circumstance favours that view,—that irritation of the splanchnic in animals arrests the movements of the intestines.

The colon descendens and the rectum receive, according to Nasse,* motor fibres from the plexus surrounding the inferior mesenteric artery.

3. *Urogenital Apparatus*.—The movements of the bladder, the ureter, the seminal vesicles, and the uterus, are partly excited or increased by irritation of the trunk of the sympathetic nerve in the abdomen or of the plexuses in the abdominal cavity; but it is still an open question whether the originating or increasing of these movements takes place directly from the sympathetic by excitomotor fibres, or reflexively through the afferent or sensory nerves of the viscera. As regards the bladder, Budget† has shown that most of its direct motor branches come from the spinal cord, from the centrum genito-spinale superius and inferius, through the sacral nerves; some also pass through the sym-

* "Beiträge zur Physiologie der Darmbewegung," Leipzig, 1866.

† Henle's and Pfeufer's "Zeitschrift für rationelle Medicin," xxi., p. 174. "Wiener med. Wochenschrift," 1864, No. 39-41.

pathetic hypogastric plexus to the vesical plexus; in the latter, also, are sensory and reflexively-acting fibres.

Regarding the movements of the uterus, opinion varies very much. According to the researches of Obernier,* Frankenhäuser,† and Koerner,‡ the hypogastric plexus and the spermatic nerves arising from it appear to contain all, or the most important, motor nerves of the female genital apparatus; Kehrer,§ on the other hand, got no result whatever from irritation of the plexus hypogastricus (magnus). Kehrer regards the sacral nerves as exclusively motor nerves of the uterus; and Koerner and Obernier at least admit the presence of excitomotor fibres in the sacral nerves; whilst Frankenhäuser believes them to be inhibitory nerves, and considers the inferior mesenteric ganglion the proper motor centre of the uterus. According to the above-named authors, the centre for the uterine spinal nerves is to be sought for partly in the neighbourhood of the last dorsal and four first lumbar vertebræ, and partly further upwards, perhaps even in the brain (the cerebellum?); and these statements are corroborated by the latest experiments of Oser and Schlesinger.

Movements in the vasa deferentia and the vesiculæ seminales followed, according to Budge|| and Loeb,¶ irritation of the trunk of the sympathetic in rabbits, from the ganglion lying on the fifth lumbar vertebra downwards; while irritation above that level was followed by no result. The fibres producing that effect rise, as shown by Budge, in the centrum genito-spinale superius, at the level of the fourth lumbar vertebra.

II. *Movement-Controlling (regulating) Branches.*—Under this title we have to distinguish between two varieties of branches—(a) Those which control the movements in the viscera directly, centrifugally, that is, probably through the operation of automatic exciters of movement—excitomotor ganglia in the parenchyma—*controlling nerves*, in the strictest sense; (b) Those which exercise their function

* "De nervis uteri." Diss. Bonn. 1862.

† "Die Bewegungsnerven der Gebärmutter. Jena'sche Zeitschrift für Medicin und Naturwissenschaft," i., 35 and 46.

‡ "De nervis uteri." Diss. Breslau, 1862; "Centralblatt für die Med. Wissenschaft," 1864, No. 23.

§ Ueber Zusammenziehungen des Weiblichen Genitalapparats ("Beiträge zur vergleichenden und experimentellen Geburtskunde." Giessen, 1864).

|| See "Meissner's Jahresbericht," 1858, p. 585.

¶ *Ibidem*, 1865, p. 488.

reflexively, centripetally, by acting on the movement-controlling, regulating mechanisms in the central nervous apparatus—*reflex inhibitory nerves*. The latter should probably also be regarded as sensory nerves; like these, their action is reflex, only that action does not show itself in movement, but rather in checking or controlling movement.

The splanchnic nerve is generally considered a direct inhibitory nerve; Pflüger proved that irritating it arrested the peristaltic movement in the small intestine. Indisputable as this fact is, the inference evidently to be drawn from it—that of a directly-controlling action of the splanchnic—has lately become somewhat doubtful; we know, especially, that the splanchnic is also the vasomotor nerve of the small intestine (see below), and the lessening of the arterial blood supply following the irritation might be regarded as indirectly the cause of the decrease or arrest of the peristaltic action. The controlling fibres of the splanchnic pass, as has been pointed out by Pflüger and Nasse, into the dorsal part of the spinal cord; their central termination, however, has not yet been ascertained.

The reflex inhibitory nerves have an action similar to that of the superior laryngeal on the respiratory movements (F. Rosenthal); those which control the movements of the heart and bloodvessels are contained in the thoracic and abdominal parts of the sympathetic, as Goltz and Bernstein have demonstrated. Goltz* found that, in striking or tapping on the skin of the abdomen in frogs, or on the exposed abdominal viscera, the so-called percussion experiment (Klopfversuch), he produced a temporary diastolic arrest of the heart's action and a hyperæmic dilatation of the vessels of the abdomen. He explained the arrest of the heart's action as a reflex irritation of the vagus—the dilatation of the vessels of the abdomen as paralytic relaxation (atony) due to decreased activity of the vasomotor nerve-centre. Nevertheless he did not succeed in demonstrating particularly the routes by which this reflex action travels. On the other hand, Bernstein† has more lately proved that those branches which stimulate the vagus reflexively run in the trunk of the

* "Archiv. für Pathologische Anatomie," xxviii., p. 428; xxix., p. 294, "Centralblatt für die Med. Wissensch.," 1864, No. 40.

† "Herzstillstand durch Sympathicus-Reizung;" "Centralblatt für die Med. Wissensch.," 1863, No. 52; 1864, No. 16. "Untersuchungen über den Mechanismus des regulatorischen Herznervensystems, Reichert's und du Bois Reymond's Archiv. für Physiologie," 1864, p. 614.

sympathetic, and, for the most part, pass into the spinal cord between the third and sixth dorsal vertebræ through the communicating branches; as we have formerly mentioned, only a few are found further up, as high as the ganglion stellatum. After division of the sympathetic the percussion experiment gives no further result; but the effect of irritation of the sympathetic on the heart remains when both vagi are previously divided, or when the medulla oblongata is destroyed. Further, Bernstein succeeded, at least in frogs, in demonstrating the peripheral branch in which the reflex controlling fibres are conducted from the abdominal viscera to the trunk of the sympathetic. It is a small nerve which accompanies the mesenteric artery; stimulation of this nerve caused the diastolic arrest of the heart's action, as in irritation of the trunk of the sympathetic or of the exposed abdominal viscera. Bernstein states that similar treatment of the splanchnic does not produce the same effect.

Concerning the controlling power of the *nervi erigentes* on the bloodvessels of the penis, see below (vasomotor branches).

III. *Vasomotor, or Secretory and Trophic Branches.*—The vasomotor nerves of the thoracic and abdominal viscera are distributed for the most part, if not entirely, by the sympathetic—the plexuses and peripheral branches of the thoracic and abdominal portions.

1. *The Lungs.*—Formerly the vagus was generally regarded as the vasomotor nerve of the lungs, this view being supported by the well-known changes which take place therein on division of the vagus (Longet, Wundt, Schiff, and others). Traube has shown that the cause of these changes is that portions of food get down the air-passages, and that the vagus, as a vasomotor nerve, has no share in producing them. Wundt* conjectured that the sympathetic branches were concerned in the innervation of the vessels of the lungs; and lately Brown-Séquard† concluded, after experiments on dogs, rabbits, and guinea-pigs, that the vasomotor nerves of the lungs are not distributed in the vagus, but through the spinal cord (cervical portion) and the first thoracic ganglion of the sympathetic.

A carefully-conducted series of experiments performed by

* Versuche über den Einfluss der Durchschneidung der vagi auf die Respirations-organe: Müller's "Archiv für Physiologie," 1855.

† On Ecchymoses and other Effusions of Blood caused by a Nervous Influence: Archives f. Scientific and Practical Medicine, 1873, Febr., No. 2, p. 148.

Bischofswerder* on rabbits led to the conclusion that the vagus, as well as the sympathetic, acts as a vasomotor nerve of the lungs. The simultaneous extirpation of the uppermost thoracic ganglion and both vagi was followed by a much stronger hyperæmia and infiltration of the lungs than division of the vagi only.

According to Brown-Séquard's observations, the vasomotor nerves of the lungs appear to have a cerebral origin. This author repeatedly saw pneumonic infiltration, hæmorrhages, and œdema of the lungs, after injury to the base of the brain. Nothnagel made the same observation after injury to a certain spot on the surface of the rabbit's brain, near the sulcus found on its superior aspect; sometimes nearly the whole lung was infiltrated with blood.

2. *Stomach and Bowel.*—The secretion of the gastric juice seems to be carried on automatically by the ganglia situated in the walls of the stomach. The sympathetic has no direct influence on the process, so far as we know; the vagus, however, does exercise some such influence, but perhaps only reflexively, as the sensory nerve of the stomach. This view is supported by many experiments, amongst others those of Lussana and Inzoni.† The sympathetic plexuses and ganglia have, however, some control over the nutrition of the walls of the stomach; thus, Pincus‡ and Adrian§ observed, after extirpation of the solar plexus, various changes in the mucous membrane of the stomach and upper part of the small intestine (intense hyperæmia, extravasation of blood, and ulceration), but none in the secreting power of the stomach.

The vasomotor nerve of the intestine, at least of the small intestine, and probably of most of the abdominal viscera, is the splanchnic, the principal vasomotor nerve in the body. Irritation and extirpation of the different ganglia and sympathetic plexuses of the abdomen have a certain, but very inconstant influence on the intestinal secretion, the nature of the intestinal evacuations, and on the general nutrition. Thus, after extirpation of the cœliac plexus some observers noticed increased secretion from the intestines (Adrian), or

* "Vagus und Sympathicus, die vasomotorischen Nerven der Lunge." Dissertation. Greifswald, 1875.

† "Gaz. Hebomad," 1863, x., 13.

‡ "Exper. de vi nervi vagi et sympathici ad vasa secret. nutrit. tractus intestinalis et renum," Diss., Breslau, 1856.

§ "Ueber die Functionen des plexus coeliacus und mesentericus," Dissert., Giessen., 1861.

hæmorrhagic diarrhœa (Cl. Bernard); Lumansky* also observed emaciation and discharge of undigested food per anum.

The centre for the vasomotor nerves of the intestine, like that of the vasomotor nerves of the liver, &c., appears to be in the brain. We ourselves frequently noticed the occurrence of hæmorrhagic diarrhœa in dogs, after injury to different parts of the cerebellum.

3. *The Liver*.—Schiff first proved that the vasomotor nerves of the liver are distributed in the sympathetic; and he at the same time drew attention to the great importance of these nerves in the pathogeny of diabetes mellitus produced experimentally in animals, by means of Bernard's puncture, &c.

The vasomotor nerves of the liver are held by Schiff † to rise in the neighbourhood of the floor of the fourth ventricle of the brain, the medulla oblongata, and the anterior half of the cervical and thoracic parts of the spinal cord, as far downwards as the fourth or fifth dorsal vertebra in mammalia. Here they enter the sympathetic through the communicating branches, so pass downwards, and eventually accompany the vessels of the liver (as the hepatic plexus) to the interior of the parenchyma of the gland.

He states that injury to these vasomotor nerves in any part of their course has the same effect as wounding their centre by puncture. In all these cases the first result was a paralytic dilatation of the vessels of the liver producing considerable hyperæmia. It is this latter which, by transformation of the glycogen, causes the formation of sugar, which appears in the blood and afterwards in the urine.

Pavy ‡ has noted the occurrence of diabetes after injuring the uppermost cervical ganglion; Eckhard, § after destroying the uppermost thoracic and inferior cervical ganglia, after wounding the vermiform process of the cerebellum in rabbits, and after section of the spinal cord from the medulla oblongata downwards to the level of the lumbar vertebræ; and, finally, Schiff observed it after division of the sciatic nerves. These experiments, and the occurrence of a transient melituria after each considerable disturbance

* "Zeitschrift für rationelle Medecin," Band xxviii., p. 259 (1866).

† "Journal de l'Anat. et de la Phys.," 1866, p. 354.

‡ "Researches on the Nature and Treatment of Diabetes." London, 1862.

§ "Beiträge zur Anatomie und Physiologie," Band iv., p. 3; Band vi., Heft 2.

of the circulation, after ligature of the larger vessels, and under the influence of certain poisonous substances, &c., are probably to be explained on the ground that, under the circumstances mentioned, either by direct or indirect co-operation of the vasomotor nerves of the liver, there is an increased flow of blood to that organ, and, consequently, an increased production of sugar. This explanation is further supported by the later experiments of Cyon and Aladoff,* who also bring to light many new details on this subject. They established the fact that extirpation of the cervical ganglia of the sympathetic, and of the lower ganglion alone, immediately and constantly produces diabetes. The same result follows even when the ganglion is carefully, without any direct disturbance, raised and allowed to remain in its place, and then all the nerve-branches, both central and peripheral, with which it is connected, divided. It follows from that that the diabetes is not produced, as Eckhard believed, by stimulation, but by a paralysis of the sympathetic nerves; and that the nerves, paralysis of which causes diabetes, stand in connection with the last thoracic and first cervical ganglia. An examination of the afferent and efferent nerves of these ganglia, with respect to their influence on the formation of sugar, showed that diabetes occurs when division is practised either on both rami vertebrales or on both the nerves which pass from the inferior cervical ganglion to the first thoracic ganglion, encircling the subclavian artery and forming the so-called annulus Vieussensii. On the other hand, division of the other nerves of the inferior cervical ganglion causes no diabetes. Thus the nerve-fibres, paralysis of which produces diabetes, leave the spinal cord through the rami vertebrales, traverse the ganglion cervicale inferius, and pass thence in the trunk of the sympathetic and in the splanchnic nerves to the liver. One might thus expect that division of the splanchnic nerves should occasion diabetes. In fact, V. Gräfe,† Hensen, and Ploch,‡ had observed, amongst other things, the occurrence of the disease after division of the splanchnic; Eckhard§ and Pavy deny this, however, and even state that, after preliminary division

* "Bulletin de l'Acad. Imperiale des Sciences de St. Petersburg," 1871. Tome xvi., p. 308.

† See "Krause, Annotationes ad Diabetem." Halle, 1858.

‡ "Ueber den Diabetes nach Durchschneidung des N. Splanchnicus," Dissert., Giessen., 1863.

§ "Beiträge zur Anatomie und Physiologie," 1867, Band iv., p. 3.

of the splanchnic, "Bernard's puncture" does not cause diabetes. The further statements of Cyon and Aladoff are corroborative of these. They found that division of the trunk of the sympathetic between the tenth and twelfth ribs in dogs almost never produces diabetes; and further, that when this section has been performed, division of the lowest cervical and uppermost thoracic ganglia is no longer followed by diabetes. When, on the other hand, the splanchnic or the trunk of the sympathetic is divided only after the "puncture" (pricking the floor of the fourth ventricle with a needle), or after wounding the ganglia just mentioned, the artificial diabetes remains.

A solution of these apparent contradictions is possible only on the ground that certain nerves, paralysis of which hinders the occurrence of diabetes in some way, enter the trunk of the sympathetic below the first thoracic ganglion. Thus there must be two sorts of fibres in the lower part of the sympathetic and in the splanchnic, of which the one variety (those coming from the first thoracic ganglion, hepatic vasomotor nerves), when paralysed, produces diabetes; while the other, emerging from the spinal cord at a lower level, prevents diabetes when paralysed. These latter fibres are merely, as Cyon and Aladoff have shown to be very probable, the vasomotor fibres of other organs. In order to the production of diabetes there must be a greater flow of blood through the dilated hepatic vessels, as, in fact, occurs in paralysis of the vasomotor nerves of the liver, contained in the annulus Vieussenii. After division of the lower part of the sympathetic, or of the splanchnic, there is an accumulation of blood in the other organs, whereby the augmentation of the quantity of blood in the liver in consequence of the simultaneous paralysis of *its* vasomotor nerves is reduced to a minimum. If, on the other hand, by preliminary "puncture," or by extirpation of the uppermost thoracic ganglion, dilatation of the hepatic vessels has already occurred, division of the splanchnic cannot, at least at first, put an end to this dilatation; thus the diabetes, after this operation, lasts some time.

Budge* observed increase of size and congestion of the liver also after extirpation of the semilunar plexus. This was not, however, confirmed by Adrian.† Moreover, this

* "Verhandlungen der Leopold. Carol. Academie," Band xix., p. 258.

† Eckhard's "Beiträge zur Anatomie und Physiologie," 1862, Bd. iii, p. 61.

proceeding often leads to the early death of the animal (within 24 hours), through injury to the neighbouring parts.

4. *The Kidneys.*—These organs obtain their vasomotor nerve supply partly from the sympathetic and partly from the splanchnic nerves. This is proved by certain experiments in which various qualitative and quantitative changes in the urine (apart from Glycosuria), and disturbances in the nutrition of the kidneys and suprarenal capsules, take place after interference with the sympathetic.

It is a noteworthy fact that the diabetes occurring after dividing the sympathetic is usually conjoined with hydruria; but diabetes without hydruria, or hydruria without diabetes, may be set up according as the vasomotor nerves of the liver and kidneys are interfered with in the joint or separate part of their course. Thus Cyon and Aladoff, in their fore-mentioned experiments, observed only diabetes without hydruria. Knoll,* after division of the splanchnic, only polyuria without diabetes. The experiments were performed in such a way that cannulæ were placed in both ureters in dogs, the splanchnic on one side divided, and the quantities of urine secreted on each side compared. On the side operated on the quantity was considerably increased. Eckhard, after mechanical irritation of the vermiform lobe of the cerebellum in rabbits, noticed melituria; but after previously dividing the hepatic nerves, only hydruria. Bernard and Donders discovered that, on injuring a certain spot in the fourth ventricle of the brain, the secretion of urine was increased; this spot is very near to, but does not coincide with, that part injury to which produces diabetes. On the whole, these experiments support the view that the vasomotor, or secretory, nerves of the kidneys, like those of the liver, have a cerebral centre. Other changes in the urine (albuminuria, hæmaturia), indicating more serious alteration in the action of the kidneys, have been met with by other investigators, after experiments in which not only the renal nerves in their course were operated on, but also certain parts at the base of the brain. Bernard holds, with regard to secretion in the kidneys, that there is a nervous antagonism between the vagus and splanchnic similar to that which exists in the large salivary glands of the mouth between the nerves of secretion distributed in the sympathetic and those of the chorda tympani. Thus, on irritating the vagus there is said

* "Ueber die Beschaffenheit des Harns nach der Splanchnicus-durchschneidung" (Eckhard's "Beiträge zur Anatomie und Physiologie," 1871).

to occur an increased flow of blood, distension of the veins, a lighter colouration of the venous blood, and increased secretion: irritation of the splanchnicus major, on the contrary, is said to produce decrease of the flow of blood and of the secretion, and a darker colouration in the venous blood.

That also the vasomotor nerves of other abdominal organs (as the spleen) and of the whole genital apparatus are included in the trunk of the sympathetic is undeniable from the anatomical point of view, although special investigation by experiment has hitherto given but vague results. Irritation of the splenic plexus, and of a branch of the cæliac plexus, according to Jaschkowitz,* reduces the size of the spleen, probably from contraction of the vessels in this very vascular organ. On the other hand, it has been proved by Bochefontaine† and von Tarchanoff‡ that after ligature of the splenic plexus, or division of the splenic nerves, a distension of the spleen occurs, which is brought about by a dilatation of the vessels; in a few days this subsides, exactly as in the case of the vessels of the ear after division of the cervical sympathetic. As for the vessels of the penis, we know, from the researches of Löven, that irritation of the nervi evigentes results in relaxation of the arteries. It is still, however, undecided whether this is really produced by vessel-dilating nerves or by a reflex lowering of the arterial tone by the irritation of sensory nerves, as in Goltz's percussion experiment.

In the sympathetic are distributed, not only the vasomotor nerves of the thoracic and abdominal viscera, but also *those of the extremities*. Claude Bernard§ believed that the vasomotor fibres for the upper and lower limbs do not at first form part of the plexuses of the extremities, but, coming from the trunk of the sympathetic, join them through the rami communicantes. The investigations of Schiff|| also tend to indicate that the vasomotor nerves of the upper extremities come partly from the spinal cord through the communicating

* "Dissertation," Berlin, 1857.

† Brown-Séguard's "Archiv," t. vi, 1874, p. 698.

‡ Pflüger's "Archiv für Physiologie," Band viii., p. 97, 1874.

§ "Comptes rendus," 1862, II, p. 228, 400, 425; "Journ. de la Phys.," V. 33.

|| "Neurologische Untersuchungen," Frankfort a/m., 1855.

branches and join the thoracic part of the sympathetic, while those for the lower extremities proceed to the sacral portion; and, further, that there are also vasomotor nerves of spinal origin which do not traverse the sympathetic, but pass onwards directly in the spinal plexuses and nerve-trunks. The brachial plexus thus conveys the vasomotor nerves destined for the skin and muscles of the upper limbs (Schiff); the skin of the trunk is supplied from the dorsal and lumbar nerves, that of the lower extremities from the lumbar and sacral plexuses (Pflüger, Schiff). It is only for the lower part of both limbs that vasomotor fibres pass directly from the trunk of the sympathetic, to which they were conducted through the anterior roots of the spinal nerves.

IV. *Sensory branches (acting reflexively).*—Whilst the sensory fibres for the thoracic viscera (the heart and lungs) are almost exclusively connected with the vagus, those for the abdominal viscera are, for the most part, distributed by the sympathetic system. It is for the stomach only that the vagus is to be regarded with certainty as a nerve of sensation, as the forementioned experiments of Lussana and Inzoni demonstrate. It has not yet been shown whether, in addition to it, sympathetic fibres (branches from the solar plexus) take part in the sensory innervation of the stomach, as has been often asserted on pathological grounds.

The sensory nerves of the *Intestine* appear to proceed from the splanchnic nerves. Ludwig and Haffter* found that division of these nerves produced very great pain, an observation which Nasse† corroborates. Whilst the motor and inhibitory fibres of the splanchnic supply only the small intestine, the sensory fibres, according to Nasse, reach the ascending and transverse colon; the descending colon and the rectum receive motor and sensory fibres from the plexus which surrounds the inferior mesenteric artery. The latter may also include sensory filaments for the walls of the bloodvessels; Colin,‡ at least, holds that the arteries of the abdominal viscera are characterised by great sensibility, which the arteries of the superficial parts do not possess.

In passing we shall here mention that formerly, when a greater degree of independent action was generally attri-

* "Neue Versuche über den N. Splanchnicus major and minor, diss. Zurich," 1853. "Henle's und Pfeufer's Zeitschrift für rationelle medicin. N. F." Band iv. p. 322.

† "Beiträge zur Physiologie der Darmbewegung." Leipzig, 1866.

‡ "Sur la Sensibilité des artères viscérales, comptes rendus," lv., p. 403.

buted to the sympathetic nervous system, even by eminent physiologists (Bidder,* Volkmann†), it was regarded as the centre not merely of motion, but also of sensation, for all the vegetative organs of the body. It is clear that at the present day we can no longer accept this view; and just as little importance can be attached to that of Küttner and Volkmann, regarding the possibility of a "Cross-conduction" ("Quer-leitung,") by transference of sensory impressions from the sympathetic to cerebro-spinal fibres. We can now only regard it as possible that sensory filaments pass through the sympathetic to the cerebro-spinal system, notwithstanding that these cerebro-spinal offshoots, and the central terminations of the sensory fibres of the sympathetic (as, for instance, those contained in the splanchnic), are still, to a great extent, unknown to us.

Budge‡ has given us some reliable data regarding the sensory nerves of the *bladder*. According to him the sensory or reflex nerves of the bladder and urethra emerge from the spinal cord with the 3rd and 4th sacral nerves, and join the hypogastric plexus and lumbar part of the sympathetic. Irritation of the latter produces reflex contractions of the bladder, which do not appear after the third and fourth sacral nerves have been divided. Gianuzzi§ also, by irritating the branches passing from the sympathetic to the hypogastric plexus, obtained contractions of the bladder, occurring more slowly, and only after more powerful irritation, than when the second, third, and fourth sacral nerves were operated on.

Besides the fibres which are, properly speaking, sensory (amongst which we, according to the present state of opinion, can only reckon such as pass upwards to the brain, and make their condition of irritation known by distinct sensation), there is still a large number of centripetal, reflexively-acting filaments in the trunk of the thoracic and abdominal sympa-

* "Erfahrungen über die functionelle Selbständigkeit des sympathischen Nervensystems. Müller's Archiv. für Physiologie," 1844, p. 359.

† "Die Selbständigkeit des sympathischen Nervensystems durch Anatomische Untersuchungen nachgewiesen," Leipzig, 1842. Kölliker assumed an intermediate position: "Die Selbständigkeit und Abhängigkeit des sympathischen Nervensystems durch anatomische Beobachtungen bewiesen," 1845.

‡ Henle's und Pfeufer's "Zeitschrift für rationelle Medicin." Band xxi. und xxiii; "Wiener med. Wochenschrift," 1864. No. 39-41.

§ See Meissner's "Jahresbericht," 1863, p. 404.

thetic. We have already discussed those fibres which have a reflex influence on the heart's contraction, the vascular tone, and the movements of the urogenital apparatus, and have also stated that, as regards many apparently automatic movements in the viscera, it is doubtful whether they are not rather produced, or increased, by the reflex action of centripetal nerves. This refers, for instance, to the peristaltic action of the intestine, the reflex origin of which was asserted by Henle*, in 1840; the seat of this action he, after a series of experiments on mammals, believed to be the ganglia scattered among the intestinal nerves, a statement corroborated by various other experimenters (Budge,† Koelliker‡). Volkmann,§ Longet,|| and Pickford,¶ however, disputed the validity of these conclusions, at least in so far that they found the existence of the spinal cord in its whole length necessary to the production of the more extensive movements in the intestines. The later and frequently-quoted experiments of Nasse are partially favourable to the possibility of a reflex origin through interposed intestinal ganglia.

Brown-Séguard and Remak** discovered that division of the sympathetic below the uppermost lumbar ganglion, or of the cæliac plexus in frogs and mammals, at once produced persistent dilatation of the pupil on the side operated on. This phenomenon must obviously be understood to be of reflex origin, though the path by which this reflex nervous action travels is still quite unknown.

(To be continued.)

* "Pathologische Untersuchungen," 1840, p. 92; "Allgemeine Anatomie," p. 724.

† "Untersuchungen über das Nervensystem." Heft. Frankfurt, 1842, p. 178.

‡ "Die Selbständigkeit und Abhängigkeit des sympathischen Nervensystems," p. 34.

§ Müller's Archiv," 1838, p. 29.

|| "Anat. et Phys. du système nerveux," ii., p. 577.

¶ "Archiv. für phys. Heilkunde," 1843, p. 422.

** "Neue Beiträge zur Lehre von der Tabes. Berliner klin. Wochenschrift," 1864, No. 41.

On Thought without Words, and the Relation of Words to Thought. By WILLIAM W. IRELAND.

PART I.—*On Wordless Thought.*—The object of this essay is to enquire how far thought can go on without language, and what is the nature of its association with words, or other symbolic means of expressing or communicating ideas?

In studying these questions, much may be learned from what has been observed both in the normal and deranged states of mental activity.

It is scarcely needful to remark that in the lower animals the use of the senses and the muscular apparatus come into play sooner than in man; in many cases shortly after birth.

Those actions which are performed without any preliminary training or rehearsal, are called instinctive, and are believed to be dependent upon the reflex activity of the spinal cord. For example, almost all mammalia can swim; if put into the water, they do so at once (we may say instinctively, if content with that species of information which is furnished by a word), but, at any rate, when thrown into the water, motions are excited which paddle them along. There is, however, no instance, as far as I am aware, of a man being known to swim without being taught, or at least teaching himself, and when a man who cannot swim falls into the water, instead of striking out like a dog or a blind kitten, he almost always throws up his hands in the air, which is the very thing he ought not to do, apparently under the idea that his hands should be ready to catch something. It is not apparent what advantage man can have gained in the "struggle for existence" in losing the power of swimming without being taught.

At any rate such reflex actions are rare in the human being. Sucking and swallowing are the most important, and are needful to sustain life in the new-born child. The use of the senses and of the motor apparatus has, in the human infant, to be learned by the action of the mind. The exercise of the mind probably commences from birth with an involuntary analysis of sensations. At first these sensations probably appear as mere modifications of consciousness; but the child gradually learns to distinguish and compare what he sees, feels and hears, and to assume that his feelings are caused by objects existing beyond himself. By continually seeing his mother or his nurse, he learns to recognise them, as distinct from other persons or objects. Then, by comparing

the impressions of touch with those of sight, he elaborates, by slow degrees, the ideas of substance, of resistance, and of extension, and attaches physical qualities to certain objects. By incessant efforts he learns the use of his muscles, and what muscles to use for a desired motion. From the appearance of objects, he learns whether they are beyond his reach. Naturally mistakes are often made in learning; the infant gropes, and misses many a thing he wishes to lay his hands upon. By degrees he learns the true line of vision. He grasps at many objects beyond his reach, ere he learns how to judge of their distance, or their relative size.

When the child comes to be able to co-ordinate his muscles, so that he can walk, his mental progress is very rapid. He recognises persons and things long before he knows their names; he is extremely observant, and examines everything. In fact, he often notices things which escape the attention of ordinary people. His apprehension of the motions of others is often represented by imitation, which is a species of wordless language. Any one who attentively watches the growth of a child's intelligence, will find that ideas do not accompany words, but precede them. The period when speech commences is some time after generalisations and abstractions are formed in the mind. His few words, when he begins fairly to speak, answer to a great many ideas, and pass from an individual to a general sense. If he learns one word, he uses it to express associated ideas, in a way which, if we consider his limited experience, is very skilful. Thus, a child saw a salmon, and learned the name. After this he called all fishes "salmons;" then some one gave him sugar fishes, he immediately recognised the resemblance, and called all sweetmeats salmons. Ideas stand in the child's mind between the words, the words being, as it were, landmarks to explain or indicate the drift of his thoughts. He rapidly learns the properties of objects, and generalises on the changes of the outer world. He distinguishes colours and other properties of matter long before he can name them. In learning to speak, children generalise grammar for themselves, and do so correctly where custom has led us wrong. They decline irregular verbs in a regular manner, and give regular declensions to nouns which have irregular inflections. A child says, for example—I falled. The mouses runned away. The sheeps drinked—and so on.

The child has gone through a series of intellectual processes. He has learned to adjust and measure his muscular

efforts to produce certain motions. He has ideas of distance, of the relative solidity of bodies, of their smell and taste, of heat and cold, of time and space, of what is pleasant and unpleasant, and of all the familiar phenomena of nature. In fact, most of these acquirements are made by the deaf child, who has no idea of speech, and has not yet learned signs. It is common enough to ignore the intellectual character of these early enquiries, and to talk of them as something instinctive and intuitive; and it is only a careful analysis that helps us to make out the purely mental character of many things we have not learned through words, and which we do not habitually associate with words.

Lest we lose ourselves in too wide a field, let us consider how much the mental element enters into some of our habitual perceptions. In this enquiry I have taken Helmholtz as my guide, and perhaps one of the most striking of the laborious investigations of this philosopher on the Physiology of the Senses, especially of sight and hearing, is the demonstration how much the action of the mind enters into the perception of the outer world. Perceptions believed to be intuitive or reflex, are really mental operations performed with such ease and rapidity, that the mental interpretation is confounded with the sensory impression or the recognition of a simple sensory impression. At the end of the "*Handbuch der Physiologischen Optik*,"* Helmholtz remarks that it appeared to him always preferable to found the explanation of natural facts upon the least number and the best ascertained of hypotheses. He adds, "I ought also to say that in the course of these researches, which have taken up a good part of my life, the more I have learned to submit to my will the movements of my eyes and my attention, the less it has appeared admissible to explain the principal phenomenon of this class by the action of pre-existent nervous mechanism."

Helmholtz defines a representation (*Vorstellung*) as the idea or image that our memory gives of an absent object. The word apprehension (*Anschauung*) is the perception accompanied by corresponding sensations. Impression (*Perception*) is a notion which contains nothing not immediately arising from the sensations of the moment, that is to say, a notion such as might be formed without any remembrance of what one could have seen before. Thus, the same notion may

* I have used the French translation by Émile Javal and N. Th. Klein, Paris, 1867.

be accompanied by very different degrees of sensation, and the representation or mental act of recognition may combine in very different proportions, in the observation of an outward object.

Helmholtz illustrates this, by reviewing what takes place when we enter a room with whose details we are familiar. During the day our movements are regulated purely by our sensations of light and the general interpretation we assign to them; but in the dusk we could only distinguish a few known objects, such as the windows, and what we really distinguish is so confounded with our recollections, that we can still walk in it with confidence, and find the objects we seek, even when we can only seize a vague image which would be quite insufficient to distinguish objects without the knowledge previously acquired. But when the room is completely dark, we can still find our way in it by the recollection of the images already seen during the day. Thus, by cutting off successively the impressions furnished by the senses, we can pass progressively from the sensual notion to the pure representation. Our movements become so much the more uncertain, and our notions so much the more inexact, as the information of the senses fails. Nevertheless there is no leap; on the contrary, sensation and memory assist one another in a continuous manner, but in different proportions. The influence of the interpretation of sensations, is still more striking when, in certain circumstances, such as an insufficient light, a visual image is at first incomprehensible, because we do not know to what distance to place it; when, for example, we consider as near, a light which is far off, or the reverse. Suddenly we comprehend its real nature, and instantly the influence of this exact comprehension develops the real notion in all its energy, and it becomes impossible to us to return from that notion to the inexact notion which has preceded it.

Within a certain latitude, objects indeed appear to us just as we conceive them, and by altering our conceptions we alter our perception of the object. This is well illustrated in some of the diagrams in Helmholtz's book.

One engraving appears either a flight of stairs in front of a wall, or the wall seems to advance to the edge of the steps, so that we have below a row of stones advancing and overlapping one another; or in another drawing, the same surface appears a plane or a cylinder, or a plane and a concave surface when we look upon them with a different conception in

our mind ; and one can modify the pictures in his mind by conceiving a different representation through voluntary effort. Thus, while vision draws the mind, the mind guides our vision, and what is seen is received in obedience, not only to the laws of optics, but to those of psychology. It is difficult for us to conceive that we do not see things as they appear to us projected into space ; but it is now no longer capable of dispute that our ideas of size, space, and distance are the results of acquired knowledge, founded on mental efforts and experiments principally made during the years of infancy, either before speech has begun or before it has come into free use. The well-known cases observed by Cheselden, Ware, Wardrop, Dufour* and others, where those who had been born blind, or had been blind from early infancy, were suddenly, by surgical operations, put in possession of their sight, show that a man of full intellect cannot distinguish distance by sight alone. They simply see a coloured surface, that is, a surface on which light is variously refracted and reflected. All objects appear equally near to the eye ; objects known to the touch are not recognised by the eye until the person becomes accustomed to compare his sensations of touch with those of vision. Even a simple object like a key, the outline of which can so easily be felt and seen, consisting of a ring, a cylinder, and a lock, could not be recognised by the eye alone ; and apparently one in this condition coming new into the possession of sight, cannot even distinguish a body in motion from a body at rest ; that is, he does not conceive that successive impressions of the object over the field of the retina imply that it is moving. Our idea of size is the result of a mental effort, and is closely connected with our idea of distance. A body which presents a certain visual angle to the retina, or, in other words, whose outline presents a larger spot on the retina, feels larger to the finger than one where the visual angle is smaller ; but then we have learned by experience that the further an object is from our grasp the smaller the visual angle becomes ; hence, we regard those objects which present a small visual angle, and whose ordinary size has been well ascertained, as being at a distance from us, in proportion to their apparent size.

With the perception of an object we, at the same time, take in the notion of distance, which at first seems to be a part of the sensation itself, and has been believed by others

* The observations of Dufour, with a recapitulation of what is known on the question, are recorded in the "Journal of Mental Science," July, 1877.

to be intuitive, none the less easily that we have forgotten the slow and tentative process by which, during infancy, the phenomena of the outer world have been examined and arranged in our minds.

In judging of distance, we take advantage of a large number of observations when we look at well-defined objects. We rarely mistake the distance of objects within reach of our arms; but this is the result of incessant practice. In doing this, we take into consideration their relative size and clearness of outlines. In looking at more remote objects, we principally take into consideration their relative size, the distribution of shadow, and the modification of colour, by the intervening air. Thus familiar objects, like men and animals, are of great use in determining the distances of the ground upon which they stand or move. In attempting to judge of the distance of far objects, men are often mistaken, and we are generally conscious of the mental effort to arrive at a proper conclusion. Experience and intelligence here can be easily recognised as coming into play. Indeed, it is a part of the education of military men to judge of the distance of approaching forces, in order to know when to open fire, and with what species of projectile, whether with round shot, grape, or canister, as they come nearer, or how long to make the fuse of the shell. Optical instruments have been constructed to allow us to measure the visual angle under which the height of a man appears, and thus to deduce the distance by reading off a corresponding figure. Houses, trees, and shrubs being of a variable size, are less certain guides, and sometimes help to deceive us. In looking at a mountain of unknown height, we note its colour and the apparent distance of the intervening objects. We note the objects upon its sides, such as trees or precipices, and their relative size and sharpness of outline. If the profile of one hill hides a part of the other, we assume that it is nearer. We thus gather together a number of data which help us to judge of its distance, and thus of its height. We are also helped by the consciousness of the necessary effort of the accommodation of the eye, and by the degree of convergence or divergence of the lines of vision from each eye. The accommodating power of the eye itself is of little use in calculating distance, but the motions of the head and those of the body are of much service. We know by experience that near objects, when we move towards them, appear more quickly to approach us than far objects; that lateral objects, when we move

quickly, seem to move quickly towards us when they are near, and to move from us when they are far off.

As Berkeley has remarked, the ideas of space, outness, and things placed at a distance, are not otherwise perceived by the eye than by the ear. "Sitting in my study," he writes,* "I hear a coach drive along the street. I look through the casement and see it; I walk out and enter into it; thus, common speech would incline one to think, I heard, saw, and touched, the same thing, to wit, the coach. It is nevertheless certain, the ideas intromitted by each sense are widely different and distinct from each other; but having been observed constantly to go together, they are spoken of as one and the same thing. By the variation of the noise I perceive the different distances of the coach, and know that it approaches before I look out. Thus, by the ear, I perceive distance, just after the same manner as I do by the eye."

In giving these preliminary statements, I do not wish to write a treatise upon optics, but to have the reader to note, and to go on noting, that in all these processes not only are the senses employed, but also the mind; play is given to the memory, comparison, judgment and imagination.

The longer we live the less we are inclined to examine objects in all their parts. We scan them rapidly, taking only enough note of them to make out what they are, or to recognise those parts and features which interest us. Hence if we look at objects from a new point of view, we often see something in old familiar things which we had not noticed before. Helmholtz illustrates this by the observation that the colours of a landscape appear with more brilliancy and clearness than usual when one views it lying on the side or turning the head upside down. As a rule, he observes, we only seek to recognise objects for what they are. We know that green surfaces present a shade a little modified when they are seen at certain distances; but we are accustomed not to take any notice of this modification, and we learn to identify the modified green of forests and distant trees with colours they would have at a short distance. Remote objects, like chains of mountains, have very little of their own colour because it is in general toned down by that of the intervening atmosphere. This undefined greyish-blue, bounded above by the clear blue of the sky or the orange light of the evening, and bounded below by the deep green of the

* "An Essay Towards a new Theory of Vision" § xlvi.

meadows and forests, is very subject to modifications by contrast. We know that this colour in the distance changes with the time and the degree of light, and we do not seek to determine its true nature, because we have not to assign it to any defined object, and we know it was exposed to modifications; but whenever we put ourselves in exceptional conditions, when we look under our arm or between our legs, the landscape appears a flat image as much on account of its unaccustomed position to the eye as on account of the inexactitude of the binocular apprehension of distance. When the head is turned upside down we see the cloud in an exact perspective while terrestrial objects present the aspect of a picture upon a vertical substance, the ordinary aspect of the clouds. Forthwith the colours lose their relation of the distance of objects. They appear as they are with their real differences. We then recognise without difficulty that the undetermined greyish blue of the distance is often a deep violet, that the green of vegetation is insensibly transformed into bluish-green and then into violet, where it meets the circular line of the sky. All this difference appears to me to result simply from the colours being no longer signs of the nature of objects, but only of different sensations, and for this reason that, no longer led into error by other considerations, we recognise more readily the real differences.

Helmholtz's observations and experiments show that even in the recognition of a colour, where so little seems left for the mind and so much for the mere sensory impression, our perceptions are sometimes altered by ideal anticipation or inference; but owing to a regard for brevity, I must refer the reader to the book so often quoted.

As another illustration of the way we overlook some visual phenomena, Helmholtz gives the movements of a man when walking. We regard them as a whole, and do not notice any more than their most striking singularities. It requires great attention to recognise the vertical and lateral oscillations in walking, but if we look through an astronomical telescope, where the images are reversed, at men walking at a distance, we see with surprise the leaps and strange oscillations which accompany walking. There is no more difficulty in recognising the oscillations of the body and other peculiarities of walking. On the other hand, with reversed images we do not readily recognise the character of the walk, whether it be easy or heavy, majestic or graceful. We do not see distant objects as we see them when near.

We see something indistinct, and from experience founded upon generalised observation we believe that it is far off, and by certain other marks we infer that when we have traversed the intervening space it will present the reflections and the refractions of light, and the phenomena of touch and resistance and other accompaniments of a castle; but the visual impressions of a castle at a great distance are quite different from what we see when we come near to it. Thus we read symbols upon the face of nature which we have learned to associate with ideas derived by the use and comparison of our senses, reflections, and desires, very much as we interpret engravings or combinations of letters in a book. The field of our vision then is a half figurative, half ideographic chart from which we read off what interests us or what we want to know, and the longer we live the more attention do we pay to the ideographic characters of nature and the more do we discard the examination of pure sensory impressions.

The process by which we accustom ourselves to disregard so much of what is laid before our attention by our senses is thus happily described by Itard: "In proportion as man advances beyond the period of his infancy, the use, the exercise of his senses becomes every day less universal. In the first stage of his life he wishes to see everything, and to touch everything; he puts to his mouth everything that is given him; the least noise makes him start; his senses are directed to all objects, even to those which have no apparent connection with his wants. In proportion to his advancement beyond the stage of infancy, during which is carried on what may be called the *apprenticeship* of the senses, objects strike him only as far as they happen to be connected with his appetites, his habits, or his inclinations. Afterwards it is often found that there is only one or two of his senses which awaken his attention. He becomes, perhaps, a musician, who, attentive to everything that he hears, is indifferent to everything which he sees. Perhaps he may turn out a mere mineralogist, or a botanist, the first of whom, in a field fertile in objects of research, can see nothing but minerals; and the second, only vegetable productions. Or he may become a mathematician without ears, who will be apt to say, after having been witness to the performance of one of the tragedies of Racine, 'What is it that all this proves?'"

The phenomenon of single vision with two eyes, which has perplexed philosophers so much, seems capable of a simple

explanation. The mind, finding by experience that images impressed on certain points of the two retinas which stand in a certain relation to one another are really one object, recognises them as such, *i.e.*, two objects of the same colour and outline placed in a certain plane to one another are fused into one object by the mind, as is done in the stereoscope even when the motions of the eye are restrained, or the two objects seen by an instantaneous flash of light allowing no time for rotation of the eyes. If, however, one of the objects in the stereoscopic slide is different in form or in colour they are seen as two objects.

So completely does experience get the better of sensation that it is difficult for us to prove that we really see double images, and one great difficulty lies in our belief that two images of the same appearance really belong to one object. Even a certain amount of difference of outline does not prevent us fusing the two images into one, for the two eyes do not always see an image exactly alike. Most people have never remarked double images, although, as Helmholtz says, the presence of these images in the field of vision is almost constant. It is difficult for us to dissociate double images of lines of the same colour and of the same intensity when they are traced so as to represent almost exactly the images of one and the same objective line. But the movements of the eye are the principal obstacle to the perception of double images. When we examine an object we fix successively different points of its surface in such a way that the cavities of the retina constantly receive corresponding images. These are the images which are perceived most clearly and which attract the most attention. As soon as our attention is directed upon one point of the object which is situated laterally, and which perhaps presents double images, our eyes are turned almost involuntarily to fix it, which we can only prevent by an express effort of attention. Thus to distinguish double images as well as possible, one must keep the eyes immovable and look at a fixed point.

Strange as it may seem, we have not even, apart from experience, any knowledge of the line of vision, *i.e.*, the direction of a visible object, which is learned by the comparison of sight and touch. In an experiment, described by Helmholtz, objects are seen rotated from the usual line of vision, by being viewed through prisms. Objects are for a time seen double, but in a short time, by moving the eyes, so

as to compare the surfaces, they are seen single. In like manner, when objects are deviated to the right or left, by looking at them through two prisms, placed upon the framework of a pair of spectacles, the hand stretched out to seize them at first deviates in the same direction ; but in process of time the mind learns to correct this miscalculation, and we begin to see the object in a new line of vision, the result of new inferences upon altered conditions of refracted light.

There is little doubt that a man could learn to play at chess or draughts without words, and without knowing the names of the pieces. He might even learn to play at whist, where there is a necessity of a system of communication existing between himself and his partner. I have, by diligently watching the operations of my own mind, noticed occasions in which thoughts, based upon a certain amount of calculation, were transmitted into actions, without any accompanying or intermediate words ; but, of course, such processes cannot be exhibited to another without being put into words, so that I can do little more than ask my readers to look for similar processes in their own minds. Unhappily, this is asking them to run against the current, since one is nowadays much more likely to keep up the air of profound wisdom by calling sensory and motor processes intuitive, unconscious, reflex, or automatic, instead of trying to analyse them, as Helmholtz has done, for our sensations of sight and vision.

These observations will be found to hold true of perceptions made through the other senses. That distance may be measured by the ear as well as by the eye, has been already noticed. Helmholtz has shown that the sensation of the tone of a sound is composed of a series of sensations of its different component parts—the fundamental sounds and the harmonic sounds ; but the mind having got into the habit of regarding the whole as a single sound, it becomes extremely difficult to decompose the composite sensation into its constituent part, *i.e.* to make the harmonic tones heard so that the mind may recognise that they are distinct sensations, which could be easily distinguished if they occurred in less perfect simultaneity. The tactile sensations of a moist surface is composed of that of cold and that of sliding : but when we suddenly put our hands upon a cold and polished surface, we often think that we have touched something moist.

But whatever the amount of mental interpretation or inference contained in a sensation, it imposes upon us with

the same force as if it were a sensory impression and nothing more. The mind appears to receive it passively, as something we cannot correct without denying the evidence of our senses. As Epicurus long ago pointed out, illusions of the senses are simply wrong inferences. The mind is in the habit of believing a given sensation to be the result of one habitual cause, and when the same sensation is produced by a different cause which acts more rarely, it is difficult to resist the involuntary impression which connects it with the more familiar agency under which it is habitually produced. Thus, a galvanic current, or simple pressure upon the optic nerve, will bring out an impression which we call a flash of light; we feel as if this were produced by light, and nothing else; or, when the leg is cut off, patients think they feel in the foot or the toes what is really caused by the irritation of the severed nerve. When there is a mirror on the roof and one looks up to it and sees his image he feels the dread of falling downwards, just as he does when he stands on his head and looks up to the roof. Custom enables us to correct these illusions. Thus, when we approach an object quickly, the nearest objects seem nearer, and therefore smaller than what they really are. This is readily perceived in riding rapidly upon an object, so that one who is inexperienced in making a cut or thrust from horseback, finds that he almost constantly mistakes his real distance, but this illusion disappears through practice. And, indeed, many illusions disappear after the observer has had some practice in making his judgment independent of external influences.

It has been much debated whether, as Sir Charles Bell has advanced, there is a muscular sense, or whether the feeling we have of posture and accomplished movement is not communicated through the parts covering and surrounding the muscles with the assistance of vision; but at any rate we know that the mind has a very delicate knowledge of the force raised in the muscles through the incitations of the voluntary nerves, and how the force is modified in order to overcome resistance.

Every motion is a problem in mechanics, in which we measure the requisite amount of power to the weight of the parts to be moved. When we have some foreign body to lift, we start with a conception of the weight. It is said people, unaware of the great weight of quicksilver, when they get in their hands a vessel full of it, often spill it, owing to their estimate of the amount of force required to be expended being

too low. On the other hand, a scientific observer, when he poised upon his finger a small piece of potassium newly discovered by Sir Humphry Davy, exclaimed, "Bless me ! how heavy it is ;" the anticipation derived from sight having deceived the sense of touch and weight, as he had been accustomed to associate a metallic lustre with a high specific gravity.

As in viewing objects, the mind gradually withdraws its attention from the whole visible surface to one or two points of recognition, so in walking and executing other customary motions, the mind gradually minimises its attention till it attains the smallest amount requisite to carry on the operation, leaving itself free to devote its energies to other objects. The power of the mind to occupy itself with a number of parallel objects of consciousness is worthy of more attention than it has received, and it is from neglecting this consideration that some have too easily acquiesced with the superfluous theory of unconscious cerebration, and even been led to believe that a man could thread his way in a crowded thoroughfare without paying the smallest attention to the passers-by, or the many objects which he has to avoid and guard against. There is a well-known case of a woman who lost the sensation of one arm, and who was liable to drop her child when her eye did not rest upon it. This may be considered a proof that, even when she might be thinking on something else, a certain minimum amount of consciousness was necessary to this simple operation, which could be so easily combined with other actions.

In like manner a man may have a heavy body in his pocket, and believe that he had no distinct consciousness of the weight ; but if the weight was suddenly pulled out of his pocket by some one unknown to him, he would at once perceive the difference, *i.e.*, between the weight he formerly supported and the weight he now supported. But in order to make the comparison, he must have known both the first and the second weight which he had still to bear.

It may be that some acquired motions by long habit become reflex and unconscious. They cease to be cerebral and become spinal ; but these motions are not complicated, and resemble innate reflex actions in their uniform and unvarying character.

Dr. Laycock has extended the theory of reflex action to operations performed under the influence of the cerebrum, and there are some, such as laughing, to which the name of

reflex cerebral action could fairly be given, but it was sought to include under this definition a great number of other motor processes, in which the analogy was much looser. In one point of view, all muscular motions, voluntary and involuntary, might be said to be the result of reflex action, since it is generally admitted that the mind only acts upon the body through impressions derived from the sensory nerves; but there is this important difference, that in the one case the mind was called into play, and in the other it was not, and for this very reason the reactions in the one case are regular and invariable, and in the other variable and inconstant. Dr. Laycock taught that the laws of reflex action applied to every form of animal organism and even to some plants. This was giving to the term reflex a meaning too loose and vague, and by attempting to cover processes so easily distinguishable by one word, there was a risk of throwing back the subject into the confusion from which Marshall Hall had rescued it by the matchless clearness of his definitions.

In the life of a man of the learned class most of his thoughts are transmuted into speech, going off in talking, lecturing, debating, and writing; but with men of other conditions much of their mental life passes into action. Take the instance of a hunter spending his days in solitary places amidst the mists and changing lights of the hills. He follows the traces of animals, listens for their coming, searches the thickets with his gaze, calculates their motions, interprets their turns and attempts to escape. Now he is pushing through the thickets; now he is climbing the rocks, adjusting his balance every moment that he makes a new step, and calculating what will bear his weight; then loading, taking aim, firing, and defending himself from the assaults of wild animals. Such a man goes through a great deal of mental effort and feeling which directly passes into action. No doubt it may now and then be associated with words, but not necessarily so, and often words must be absent. When his observations and thoughts are busiest and his feelings most intense, they will be most actively employed in guiding his motions.

In like manner a trooper riding his horse into battle, to use a common phrase, must have all his wits about him. He guides his horse with his left arm, keeping him as well as he can in line with the horses to the right and left; he holds to the saddle with his knees, impels the horse with his spurs, and maintains his balance with the help of his

stirrups, that is he not only keeps himself on the back of an animal going in rapid motion, but he guides and controls the animal. When he reaches the enemy he has to shelter himself from the cuts and thrusts sometimes of two or three adversaries in rapid succession, to interpret their feints and elude their guards so that he may strike an exposed part. The mental effort is all the more intense that he knows a single slip will cost him his life, and the execution of these different mental and bodily actions is something wonderful.

It is too much forgotten that with human beings thought and execution are inextricably blended, and that what is called physical or mechanical work always includes some mental work too. There was little need for being surprised when it was shown that the motions of the limbs could be set agoing from electrical excitation of a central part of the top of the hemispheres of the brain. "I cannot conceive," writes Dr. J. Hughlings-Jackson, "of what other materials the cerebral hemisphere can be composed than of nervous arrangements representing impressions and movements." Dr. Jackson adds that he had long taken this for granted when considering what was commonly called the physiology of mind, especially with regard to speech, but there was little need for such a restriction.

Every voluntary act is preceded by a thought, by a conception, of the act and of the object to be attained by it, and when the object is accomplished by the performance of the act there is a recognition of the result, and then a new thought and a fresh act. The sculptor conceives of a figure of surpassing beauty and nobleness of form; he moulds his ideal in clay, and then chip by chip he works it out from the marble block; but the mental process which he has gone through could not be expressed in words; in fact, there are some actions as well as some perceptions too fine to be expressed in words. A man receives an unsigned letter which he can read to twenty others, and which twenty others can read, so that each knows its contents equally well; but only one recognises the handwriting from certain peculiarities which he cannot describe. He, therefore, knows more than all the rest since he knows who wrote it. In all crafts there are some fine touches which cannot be taught by precept or even by imitation, and which the mind must find out for itself without words, and which it cannot teach by words. A man does not know any better how to walk because he knows the anatomy and physiology of the

muscles. In rowing or managing a small boat a man can do everything without words, or without having words for its different parts; but a ship could not be managed in this way, for it cannot be worked by one hand, and therefore speech must be used so that the different hands can be directed by one head. There must, therefore, be a name for every part of the ship, and words for every manœuvre which can be done on board.

It frequently happens that a man can perform some work very skilfully without being able to explain how, as he is not accustomed to associate his actions with words. If very anxious to explain how he does it he acts the thing over in imagination, and then tries to find words to describe the revived actions.

In the continuation of this paper, which will appear in a subsequent number, I purpose giving some illustrations of the principles here laid down, derived from what has been noticed in abnormal states of mind, especially in idiocy and insanity.

(To be continued.)

Observations on some Points in Cerebral Pathology, and on Percussion of the Skull. By ALEXANDER ROBERTSON, M.D., F.F.P.S.G., Physician to the Town's Hospital and City Parochial Asylum, Glasgow.*

The question how far disease of the surface of the brain may reveal itself by symptoms which point to the exact position of the morbid process, is one of considerable interest, not only in a physiological point of view, in relation to the functions of the convolutions, or from a diagnostic standpoint, as indicating the seat of the diseased action, but also in a therapeutic aspect, in showing where local treatment may probably be most beneficially carried out. In order, however, to be able to decide whether certain symptoms indicate disease in an organ, it is clearly of great consequence that we should know what are the functions of that organ in health. Regarded in this light recent experimental researches into the nature of the cerebral functions, and especially those located in the hemispherical ganglia, are of no small value to the physician. True, very many of the results obtained by

* Read at a Quarterly Meeting of the Medico-Psychological Association, held at Glasgow, 15th March, 1878.

such observers as Hitzig and Ferrier, are still problematical; but though this be granted in reference to their more detailed observations, there are certain of their broad general conclusions—those, particularly, that have been corroborated by pathology—which may now be considered as well nigh established on a firm basis of fact; and I make this remark, notwithstanding the vigorous and hostile criticism of Dr. Brown-Séquard. Amongst these conclusions the one with which we are here most concerned, is, that the convolutions bounding the fissure of Rolando are charged with motor function, especially in the upper and lower extremities.

But though in the sequel of this paper motor phenomena will be referred to in various relations, I shall chiefly direct attention to sensory symptoms, and particularly to the significance of localised pain in the head; whether that be felt by the patient without being to any extent induced by extraneous agency, or only after it has been excited by percussion of the skull, the person not being previously aware of any abnormal sensation in, or under, the part percussed.

In a state of health the substance of the brain is not sensitive, neither are the investing membranes, except the dura mater, in a slight degree. Even in some conditions of disease in these parts, little or no pain is felt by the patients. This is illustrated in the early stage of general paralysis, where there is a sub-inflammatory action in the surface of the brain and pia mater; and also in persons who have lost a portion of their skulls, and whose dura mater has, after a time, sloughed at the exposed points, giving rise to hernia cerebri—for, in such cases, pain is frequently absent. But in other forms of cerebral disease pain referred to a particular part of the head is a very prominent symptom; and this, in many instances, coincides with the seat of pathological change. Thus, some years ago, at a meeting of this Association, I showed a specimen of syphiloma of the surface of the brain, involving the dura mater to a slight extent, but not implicating the cranium. It was from the head of a young woman, who, for a long time previous to her death, suffered severe pain in the exact region of the morbid growth.

It is not, however, contended that there is at all a uniform correspondence between the seat of disease and the place where the pain is felt. How erroneous this conception would be will appear when it is remembered that, should the morbid process involve a nerve, the pain, according to a well-known law, would be referred to the part where the nerve is dis-

tributed, which might be far from the locality of the disease. In further illustration of this doubtful association, I may allude to a case that occurred recently in my practice. An elderly man was suddenly seized with left hemiplegia, without marked impairment of consciousness till upwards of two hours after the attack commenced. During this interval he complained of very severe and constant pain in the left frontal eminence. After death the convolutions on the upper surface of both hemispheres were found to be much flattened, it being particularly noticed that those on the left side were as much so as those on the right one. Besides the flattening, along with dryness and anæmia of the surface, there was no apparent morbid condition opposite the frontal eminence. There was a large amount of clotted blood in the right ventricle, and only a small quantity of dark serum in the left one. Perhaps the incidence of pressure on the dura mater and skull, in this case, was greatest at the seat of pain, even though the effusion was on the opposite side; but whatever way the pain was produced, there was at least a want of correspondence between the place where the pain was felt and the centre of disease.

But, on the other hand, and as is illustrated by the case of syphilitic disease referred to, localised pain has often a much more definite interpretation. Thus, if it is confined to one part of the head, and is of a persistent character, being never altogether away, and is dull and heavy, rather than sharp and stinging, there is some probability that it corresponds with the seat of disease. The probability becomes much greater should this pain be increased by percussion of the part of the head where it is felt, and particularly if there be no pain there till it is percussed. But if, besides, there should also be present motor symptoms, such as are known by experiment to result from excitation of the parts of the brain in the lower animals, corresponding to those in the painful region, there would seem little doubt that this is at least the chief centre of disease.

The following cases illustrate these remarks:—

J. N., age 38, engineer.* While in Madras, in 1868, he had sun-stroke of moderate severity. At that time and afterwards, till about two years ago, he often took alcohol to excess. In 1869 he had syphilis—chancres followed by indolent buboes; but there is no history nor any indication of nodes, nor are there any glandular

* An abstract of this case was recently published in the "British Medical Journal."

enlargements anywhere to be observed. He had also an attack of ague when in India, and was likewise affected with it on his return to this country; but for some years he has not suffered from it, unless it show itself in the occasional occurrence of chilly feeling. Upwards of seven years ago he began to suffer from seizures of an epileptiform character; during the first three or four years, at intervals of about six weeks, but more recently, every month or three weeks. Their form have varied, but the following has been decidedly the most common. Without premonitory symptoms, convulsive action begins in the right hand as a whole, though in a number of instances the little finger alone has been first affected; then the hand clenches and is bent on the forearm, the latter is flexed on the arm, and the side of the head is drawn towards the right shoulder. The arm in this contracted state is next spasmodically jerked across the breast for a minute or two, and then the attack ceases. On a number of occasions the seizure has commenced in the right foot and extended thence to the thigh, inducing forward and backward movements of the leg, which lasted for two or three minutes, and then the fit passed away. In all such cases (Jacksonian epilepsy) consciousness was fully retained throughout their entire course. At other times, however, and more frequently of late, the fits beginning in the arm, and progressing as described, have extended to the side of the body and to the right leg, and then he became unconscious. When that happens, the last event he is aware of is the forearm turning outwards from the chest and becoming supinated. The statements of his fellow-patients seem to show that at this stage the left side is also slightly involved. These severe seizures last two or three minutes, and the unconsciousness five to fifteen minutes longer. He suffers very acute pain in the right limbs while they are convulsed. After the fits there is impairment, or complete loss of power and of feeling in these members, which may last for three or four hours, but very generally disappears in a much shorter period.

On the 24th of last September, he had a severe fit. The convulsions were stated to have lasted about three minutes, and the total unconsciousness for ten minutes. I saw him just after he had recovered intelligence, and immediately proceeded to test the motor power and the sensibility in the extremities of the right side, which, as usual, had been specially involved. The following were the results:—1st, Motor power: Ten minutes after fit ceased no appreciable pressure was felt by me when he tried to squeeze my fingers with his right hand, though his grasp with the left one was moderately firm; at twenty minutes (tested by dynamometer), pressure exerted by right hand 2lbs., by left, 35lbs.; at fifty-five minutes, right hand 26lbs., left, 37lbs.; at two hours, right hand 54lbs., left, 51lbs. Patient is right-handed. At twenty minutes he could scarcely raise the right leg from the bed, but afterwards power was recovered *pari passu* with the arm. 2nd. Sensation: At ten minutes after the fit he scarcely felt sharp pinching in right arm and leg, though sensibility was not

appreciably diminished in the limbs of the other side ; at twenty-two minutes (tested by æsthesiometer), the two points of the instrument were felt as one at nine inches, both on the front and back of right hand and wrist, whereas they were felt as two at one and a quarter on the palm, and at three inches on the back of left hand ; at an hour, both points were recognised on the front of middle finger of right hand at an inch, and on the corresponding finger of left hand at three quarters of an inch ; sensation being thus all but restored in the affected hand.

Some months ago I happened to be in the ward when he had a seizure of quite a different kind from any of those described. He began to cry out, in a mournful strain, "Oh dear! oh dear;" and look around with a wild, frightened expression. On inquiring what was wrong, he asked, "What are they going to do to me?" In about half an hour he had fully regained his mental composure. There were no convulsive movements. He states that he had twice before suffered from turns of this kind.

Notwithstanding the long continuance of his disease, he is fairly intelligent, in illustration of which I may mention that he is entrusted with the charge of the galvanic batteries in the Hospital and the application of their respective currents. He thinks, however, that his memory is a little impaired. He has always said that he does not suffer from headache. There is inequality of the pupils, the left being the smaller, and under the normal in size. Nothing exceptional is observable by the ophthalmoscope ; and he sees equally well with both eyes. The tongue seems to deviate slightly to the right, but there is perfect freedom of movement in all directions, and he has never had the least defect in articulation. Besides slight deafness, quite usual in his occupation, there is no other indication of impairment of nerve function.

But though he always stated, in answer to inquiries, that he had no pain in the head, yet when, in the beginning of December last, I tapped somewhat firmly with the point of the finger, used as a pleximeter, all over the head, he without hesitation defined the limits of a portion of it where the tap applied was distinctly painful. This was situated on the left side, and occupied an area about two inches in diameter, the centre of which was about three inches above the highest part of the left ear. Nowhere else was there any unpleasant sensation ; and he was quite unaware that there was any exceptional condition in the region mentioned till his attention was directed to it by the percussion. The pain was described to be of a dull heavy character. On many occasions during the following three months the accuracy of this observation was verified by the same test.*

* The patient was brought before a meeting of the Glasgow Pathological and Clinical Society on the 15th December, and this point demonstrated to the satisfaction of the members present. He was also shown at a meeting of the Medico-Psychological Association in Glasgow, on the 15th March ; but he then

It is observed that the pain was not produced by mere pressure with the finger without tapping.

Treatment.—For more than a year, with the exception of short intervals, this patient had been using the iodide of potassium in from 8 to 10 gr. doses, and the bromide of potassium in 15 gr. doses, sometimes separately, and at other times together, thrice daily, but without improvement. In the beginning of December last, when the local pain was first observed, a series of cantharides blisters was ordered to the affected region of the head, and at the present time nine have been applied. At the same time the iodide was increased to doses of $\frac{1}{2}$ drachm twice daily, and the bromide restricted to $\frac{1}{2}$ drachm at bedtime. Since then he has been entirely free from fits, so that, as the last one was on the 1st December, he has enjoyed an immunity from them for three and a half months.

In reviewing this case I remark—(1) That the chief, if not the only, centre of disease is probably the surface of the brain, involving the inner membrane, in the area corresponding with the dull pain, and thus implicates the motor region for the extremities as indicated by Hitzig's and Ferrier's experiments; this diagnosis being based on the character of the most common fits—the point of departure and march of the convulsive movements, and the retention of consciousness—as well as on the seat and characteristics of the localised pain. (2) That percussion of the head was found to be an important aid in the diagnosis. By this mode of examination the force applied may, apparently, in some cases at least, be transmitted to the membranes and surface of the brain to such a degree as to induce pain in these parts *if they are not in a healthy state*. It is to be observed that, as no pain was complained of till the part was percussed, nor was produced by mere pressure without percussion, syphilitic disease of the skull or of the skull and dura mater is probably not the cause of it, because when either of them is affected with constitutional syphilis the local pain is generally considerable, and is not infrequently severe, and requires no development by external agency in order that the sufferer may realize its existence. But even though the pain should simply be the result of irritating an unhealthy skull,

stated that percussion produced only a slight pain in the special region, where previously it had been so marked. In the interval between the meetings, he had been subjected to active treatment.

it is important to bring out the fact that the bone is in a morbid condition at this point, as it very distinctly fortifies the conclusion which the nervous symptoms point to, viz., that the portion of brain immediately underneath the painful region is the seat of disease. Further, in relation to the general value of this test, it is to be hoped that more extended observation may show that it will guide to the locality of disease in other parts of the surface of the brain and its membranes, besides those which are particularly associated with motor functions. (3) That the starting point of the morbid action inducing the fits, judging from the parts first involved in the spasmodic movements, would seem to vary, being in one seizure in the centre for the arm; in a second, in that for the leg; and in a third, in that for purely mental function. This is opposed to the ordinary sequence of phenomena in such cases, for most generally each fit begins in the same way and runs the same course as its predecessors. But it is in no way surprising that where the disease is somewhat widespread, as it apparently is in this patient's brain, the morbid action may vary in its point of greatest intensity, perhaps owing to irregularities in the circulation through the blood-vessels. (4) That a transitory loss of cutaneous sensibility accompanied the brief motor paralysis which followed the unilateral convulsions. It is to be observed that the sensory defect was even of shorter duration than the motor one, and thus corresponds with what occurs in most cases of hemiplegia due to distinct organic lesion.

With respect to the pathological state of the brain on which the great impairment of both motor and sensory function was directly dependent, if it be conceded that the palsy in such cases as the one under consideration is due to temporary exhaustion of the motor centres, then it is probable that the associated anæsthesia is dependent on a similar condition of the sensory centres. In accordance with this hypothesis, and if the analogy between preceding convulsion and consequent transitory palsy be fully sustained, it might be expected that cutaneous hyper—or dysæsthesia would precede the anæsthesia. This point was not inquired into during the conscious period of the seizure, and we cannot infer from the fact of very severe pain accompanying the spasmodic contractions, that the cutaneous branches of the sensory nerves were necessarily in the same state of painful excitation as those distributed to the muscles. In relation to this question, it is worthy of note that an analogous state is occasionally seen in the region of special sense, as in

a case elsewhere recorded by me, where the epileptic convulsions were preceded by the appearance of a ball of red fire before the eyes and a subsequent temporary inability properly to distinguish that colour, though the power of recognising other colours was in no wise impaired. And further, do we not see in the sphere of mind an analogous state in the languor and even temporary exhaustion which occasionally follow great and sudden mental exertion and excitation?*

Case 2.—Wm. H., aged 39, labourer, admitted 11th February, 1878. Patient states that he was of drunken habits till June of last year, when he stopped drinking altogether. He admits having had syphilitic disease, but there are no evidences of constitutional syphilis. He has been subject to epileptic seizures for about a year; at first there were three or four a week, but since he gave up the use of alcohol they have recurred about once a fortnight; in the earlier stage there were two or three together, but latterly there has been only one at a time. For a day or two before their occurrence he has a heavy, severe pain across the middle of the head, extending to about two inches above each ear; and this, when the fits are near at hand, becomes aggravated, and seems to pass from the *right* to the *left* side. Just before the convulsive movements begin he is conscious of a numb feeling down the left arm and leg. Spasmodic contractions first affect the left arm, and three or four seconds after they begin in it the left leg is involved; almost simultaneously with the latter the morbid action extends to the same side of the face, the mouth being thereby drawn towards the left ear. Consciousness is not lost till about three minutes after the fit sets in; it remains in abeyance for some minutes. He has been told that about the time he loses his senses the right extremities become convulsed quite as much as those on the left side. In the intervals between the fits he feels quite well, except that about every second day there is a momentary darting pain through the part of the head referred to.

* 20th May. J. N. continued in all respects quite well till 14th April. On that date he had a rigor, with high fever, and a smart dysenteric attack quickly ensued, which lasted about a week. He stated that on the first day of this illness he felt a "momentary" contraction of the fingers of the right hand, but on giving them a slap with his other hand, it immediately passed away, and did not recur. Thinking that possibly the large doses of iodide of potassium, which he had been so long using, might be irritating the alimentary canal, and also that it would be desirable to introduce some preparation of mercury into his system, I reduced the iodide to gr. x twice daily, and added 1-12 gr. of the biniodide of mercury to each dose. Since then he has been using this prescription along with the nightly dose of the bromide of potassium. There has been no further illness in any form. He himself says that he has been upwards of five-and-a-half months free from fits. There can, however, be no doubt that the contraction of the fingers, very slight though it was, showed that the disposition to convulsive action had not been fully overcome.

On percussing the head with the tip of the finger no pain is felt anywhere except over a not very sharply defined area, about midway between the right ear and the middle line of the head; there, however, it is quite distinct. This pain was entirely brought out by tapping in the way I have mentioned.

The patient left the hospital after a brief residence, and before there was time to test the effects of treatment.

Case 3.—This patient was very recently under observation for two days previous to his removal to Gartnavel Asylum. About a year ago his skull was fractured by a kick from a horse. Though his general health was quite restored, he had never recovered full mental power; latterly his memory had failed greatly, and his conduct was such as to render confinement necessary. On the left side of the head there is a large semicircular cicatrix. Within the space marked out by it he says, without hesitation, that he feels pain on percussion, and that this is the only part of the head where tapping is painful. This case is open to the objection that the statement of his sensations was made by a person whose mind was far from being clear.

Case 4.—This case is not submitted with a view to illustrate the value of percussion of the skull, as it came under my observation before the idea of percussing the skull in diagnosis had occurred to me. It has, however, a number of interesting features, the chief one being, perhaps, the fact of what I think may fairly be regarded as recovery from epilepsy, after that disease had apparently been established in the system. A. B., age 12, office boy. In June, 1876, while engaged in a stone fight with other boys, he was struck by a large piece of brick on the left side of the head, a little in front of the parietal eminence. Though stunned, he was able to walk home, and he resumed his employment next day, notwithstanding that he suffered from severe pain in the head. About six weeks after the injury, he began to be affected with what his father called “absences,” which consisted in sudden suspensions of consciousness, lasting for about half a minute, and recurring two or three times a day, most frequently in the morning. While under them he did not fall or hurt himself in any way; he simply stopped suddenly in the midst of whatever he was doing, and stared straightforward till the seizure passed away, when he resumed his occupation. The attacks continued in this form and frequency for about two months, though he was using the bromide of potassium in moderate doses. Then, however, a new feature appeared; during each attack his head turned to the right, though his father (my informant) was unable to say whether or not his eyes turned in that direction likewise. About the 10th October following, he had a severe convulsive seizure, affecting the whole body, but his father was unable to say whether the one side was more affected than the other. About a week afterwards he had another convulsive fit while in bed.

At this time I saw him in consultation with the medical practitioner in attendance. The patient I found to be of good intelligence, and of thoroughly healthy aspect. On careful inquiry, it was elicited that he had still often a dull pain in the part of the head which had been struck. Its exact position was four inches above the highest point of the ear, and $1\frac{3}{4}$ inch to left of middle line; about an inch above parietal eminence, and half an inch in front of it. Besides continuing the bromide of potassium, I advised the administration of the biniodide of mercury, with an excess of the iodide of potassium, and also that a succession of fly blisters should be applied over the seat of injury. The results of this treatment were very satisfactory; he first remained free from fits of any kind for a week, but then he had a convulsive seizure; after that, at an interval of seven weeks, he had another one of the same kind. I learned from his father this morning that, since then, which was about the end of November, 1876, so far as is known, he has had a complete immunity from attacks in any form. He resumed his employment at the end of February of last year, and has continued steadily at it since that time. The medicines were gradually reduced in dose, and upwards of two months ago he ceased to take any of them. It is worthy of special note that he ascribed the great relief he obtained from the uneasy feeling in the injured part of the head to the application of the earlier blisters.*

The Physiology of some Phases of the Poetic Mind. By
FREDERICK TREVES, M.R.C.S.

(Continued from page 75.)

To take one other example as illustrating a somewhat different aspect of this question. An experienced physician arrives in a moment at the diagnosis of a case presented to his notice, but a well read and well informed student may ponder long before attaining a correct conclusion under exactly similar circumstances. In what does the difference between the mental processes in the two individuals consist? It will be said to be a matter of experience merely; but what does this statement imply? In the process of arriving at a diagnosis of the case many facts will have to be observed, many points criticised, and many arguments weighed and valued. Now in the case of the senior observer all these facts, these points, these arguments will perhaps have been passed through the mind some hundreds of times before, in reviewing similar cases; the various steps whereby his final

* 20th May. This boy continues well.

opinion is attained will, by frequent exercise and repetition, have become separately organised in the brain, and, however rapidly his conclusion may have been arrived at, the various steps will have been undertaken. But inasmuch as their influence is exercised automatically, he remains unconscious of their agency, until he stops to analyse the various reasons that have—to a very great extent unconsciously—laid the foundations of his diagnosis and the various details on which his opinion has been founded. The process may involve no more consciousness than is displayed in the movements of the envelope folder; one is aware that the envelope is folded, and the other that he has arrived at a definite opinion; but neither may be awake to the separate steps of the process until they deliberately investigate the details of the preceding movements. In the case of the immature observer, frequent repetition has not as yet made certain processes necessary to the diagnosis of the case familiar to his mind, and in consequence they have attained no sound structural position in his nerve centres; so, like the novice in the mystery of envelope folding, he has to consider each step, and proceed with deliberation, and under the acute guardianship of consciousness.

Thus we may consider the human brain as containing innumerable centres representing organically every minute matter of knowledge and experience, every definite idea and thought, every process of reasoning with which the individual has at any time made himself familiar, every sentiment and emotion, and indeed every one of those mental processes which are needful for the display, and which form the mode of acting, of the human intellect. The study of such a condition must, it is needless to say, be intricate in the extreme, marvellously involved, if not actually confused; but still by holding in view prominent and typical examples of action, some tolerably clear truths may possibly be attained.

The activity of these centres may be displayed by repetition, in each separate case, of the stimulus that originally called them into being and endued them with definiteness; and they may be considered as capable themselves also of serving as paths for conduction under certain circumstances, of passing on, as it were, an original stimulus from one allied centre to another by a means that at present must be ascribed to simple continuity of structure for want of a more definite explanation.

As in the case of defined muscular movements, so in most

cases, at least, these centres may be regarded as forming intricate organic paths along which a stimulus started in any one of them may travel in countless, but not indefinite, directions, being passed on from one central collection to the other and arousing in each one, as it is involved, the particular mental process that centre serves organically to represent. So that, for example, the mind movements aroused by the contemplation of one simple object may, by transmission through a number of connected centres, produce at length effects which may appear quite unconnected with the original stimulus, but to which, however, they may be again traced, if an attempt be made to follow its progress through the brain. To take a simple instance—the contemplation of so simple an object as a watch may arouse in the mind a limitless number of ideas and recollections. In the first instance, it may be, the stimulus of the watch will recall the maker from whom it was purchased, then some peculiarity in his manner, then a similar peculiarity in the bearing of a well known friend, then some prominent detail in the life of that friend, and so on from tract to tract, until the original cause of all these evidences of mental activity is lost in the apparently distant nature of the final processes called into play.

If these physical conditions of mental movements be allowed to have the significance attached to them, it will be evident that a particular and definite organic construction of brain will accompany certain characteristics of intellect and certain definite peculiarities of mind. The mental condition of some men, for instance, will be marked by great exactness of observation, by a correct and retentive memory, by a precision of thought and clearness of reasoning, and by deliberate and methodical action in the principal intellectual movements. All their ideas will be exact in outline and equally defined in detail, their items of knowledge will be distinct and well arranged, and their powers of mind afford evidence of a machine-like regularity and preciseness. In such a case it would not be unreasonable to consider that either from hereditary tendency, peculiar physical structure, or method of education, the individual possesses a marked power of organically registering some of the more prominent of his mental movements. The idea of any object presented to his notice, if clearly and attentively received, will impress itself firmly on the mind—as the expression runs—or, in other words, acquire a well-defined organic

position in his brain. Each separate item of knowledge will derive distinctness from the fact that it is perfectly organised, and each stimulus, to which any one of the supposed centres may be subjected, will produce a definite and unmixed effect. On the other hand, confusion of ideas, vagueness of reasoning, defects of memory, flimsiness in judgment, may be ascribed to imperfect organisation of the ideas, sentiments, particles of knowledge, and other mental processes involved in the various intellectual conditions. It would not for one moment be urged that any definite classification of mental properties could be founded on such general statements as these; nevertheless, it is important to recognise the existence of certain mental characteristics which can, it is urged, be associated in perfect reason with certain organic conditions, and which it is possible to discuss on the same grounds as are occupied in the consideration of ordinary physical actions. For man's mind is at best a complex object, and may present many grades of development; so that in one and the same brain one faculty may be found endowed with the highest organic structure, while another exists in but an elementary condition.

In investigating the physical bases and physiology of the poetic mind, those mental functions that are merely accessory or complemental, must, as a preliminary measure, be disregarded; and attention paid to those properties only that may be considered as essential, characteristic, and peculiar. As in the remarks above made on the nature of poetry, certain details were put aside as being accessory only; so in regard to the mental bases of the function, the ground for enquiry must be cleared of such characteristics as are common to other than poetic minds, and that are not absolutely essential to the display of the poetic function. In enquiring, therefore, into the factors of a poet's mind, it is needful to discard, as non-essential, the following more important traits, which, although in reality, non-essential, are nevertheless most commonly met with in those who would lay claim to be possessors of the properties of a poet:—Firstly, there may be excepted simple intellectual capacity and mental development, a condition common to all those in the field of letters who have raised themselves above the common crowd. Simple brain power—as distinguished from any special accomplishments or property of mind—is essential in the present case, only in the degree that muscular development (as apart from any special muscular power) would

be requisite for the production of an athlete, who by the acquirement of certain special energies might become distinguished in some particular branch of his calling; the special and acquired energies representing the peculiarities or distinguishing features of the man, the simple muscular development, a condition held by him in common with many others, and affording no bases for particular distinction. Then again must be excluded details of education, powers of observation, capabilities for thought and reflection, special acquirements in the various branches of learning, an appreciation of the beautiful and the perfect in form and tint, and lastly, the power of displaying the special faculty as evinced in a mastery of rhyme and a knowledge of the various modes of poetic expression. If these elements be put aside and regarded as so many non-characteristics, the ground may be considered as cleared for the study of the physical condition that forms the peculiar basis of the function itself.

As above remarked, the chief essential of poetry lies in imagination, a property that has been defined as one capable of adding to any ordinary idea a distinct and new intelligence, and of engrafting upon it unusual or relatively original elements; such addition or grafting being in every case in accord with accepted æsthetic principles. As this power is regarded as the most prominent factor of the poetic mind, the main interest of the question resolves itself into this—in what does the physical condition of imagination consist? Briefly it would seem to depend upon a want of power to well and definitely organise the mental processes it involves, and to organically build up, as it were, in the brain proper the distinct channels for the conduction of certain mind movements. In the case of what we may regard as a normal individual, the mental energy aroused by the contemplation of any object, or incident, or of any condition connected with human emotions and human interests, may be considered in each case to fix itself in the brain by organisation, so distinctly and so ably isolated from other similar organic results of mental activity, that the same stimulus will always produce the same results. So that any confusion of idea, any exaggeration of detail, any distortion or undue representation of the original is most unlikely to be produced, and therefore the spontaneous introduction of any new element in the consideration of the matter under notice is impossible, or at least so very vague and indistinct as to be practically without effect.

Now, as it is held that the chief peculiarity or distinguishing feature of the poetic brain consists in the imperfect manner in which separate mental processes are organised and retained in their original channels of distinctness, so, as before remarked, the more imperfectly or vaguely these channels are organised, the more possible is it for a stimulus to wander into other grooves, to react on other centres than its own, and to produce results other than those with which it was originally associated—a condition that has an exact parallel in various physical movements.

These remarks may be illustrated by noting the impression some simple object, such as a buttercup, would have on the mind of a man presumed normal on the one hand, and of one supposed to possess the poetic character on the other. To the normal mind the attentive contemplation of a buttercup will produce a simple distinct and definite idea, with exact impressions as to details of shape and colour; which idea, being fitly isolated, will always be called into activity in response to the same stimulus, so that any future contemplation of the flower will be followed by the same idea in its original exactness. So defined is the organisation of the idea that the activity set up by the stimulus will not tend to diffuse itself into other channels, and produce other and more distant effects. In like manner the ideas of gold and of a cup will present themselves to the mind with the same exactness and the same defined isolation, so that separate ideas of the flower, of gold and of a cup, are unlikely to be confused, to run into one another, or to be set into action by any other than the original stimulus that called them into being. But in the poetic mind the effect will be different. Owing to the imperfect and, in a way, flimsy manner in which ideas, in common perhaps with other mental processes, are organised and isolated, a given stimulus will not be limited in every case in its action to the centre with which it is connected. The separate ideas of the flower, of gold and of a cup will have each but an uncertain organisation; the aspect of gold may call up the tint of the flower, and the tint of the flower the aspect of gold, and so in like manner, by a mingling of effects, a buttercup may be spoken of as “a pale gold cup,” and a distinct novelty of idea in this manner introduced. Here one would say is an effort of imagination. But it is important at this stage that two considerations should be held in mind. First that the various separate centres which may be involved in the action

of a certain stimulus must present some element of similarity and possess some common bond of union, however vague and slight that bond might be. Without some such connecting link the passage of a stimulus through a number of centres would but evoke complete incoherence of idea, and induce a condition of mental chaos utterly abhorrent to all conception of healthy action, whether physical or mental. The common bond of colour will connect the idea of gold and the tint of a buttercup, and the common attribute of form, the figure of a cup and the corolla of the flower; and in like manner some thread of connection may be traced through the multitude of other and more elaborate mental processes that crowd an ordinary brain, and some link detected between conditions that at first sight appear to lack any common property. That there is, however, also an organic connection between the various parts, and a true structural integrity of path, is to be inferred not only from actual results, but also from the existence of a like condition in the less complex portions of the nervous system. And in the second place it is to be noted that there is a certain guiding or inhibitory action displayed in the final exhibitions of the mind processes concerned in imagination—a power that steps in, as it were, among the multitude of ideas that a certain stimulus may arouse, selecting some and discarding others. Such a selection will be guided by the rules of æsthetics where poetry is involved, and by personal acquirements where the object is not so special; and the nature of the power by which it is accomplished can be spoken of only as complex, inasmuch as it involves the factors of education, of individual development, of taste, and of the other myriad items that form the bases of individual judgment.

The majority of the so-called efforts of imagination will no doubt rise up spontaneously and in an instant, but still it is possible to conceive how such a process, although natural and automatic, may be elaborated by effort and improved by judicious reflection.

The same principles as have been above applied to a simple object hold good in all other matters that may become the nidus of a poetic fancy; although, perhaps, less distinctly than in the above instance. In all there will be the novelty of idea guided by the almost automatic regard for æsthetic rule. An incident in human life, a principle in philosophy, a simple fact in science, will present itself to the mind, considered to be normal, in a plain and definite

manner. It may be reviewed by the light of knowledge already acquired, and compared with other incidents and kindred facts, and tested by the standard that individual education has set up in the mind; but it retains, as it were, its distinctness and individuality, the element of novelty is not introduced, it presents itself to the mind as a plain fact, and as a plain fact it is hereafter regarded and retained. The poetic mind reacts differently. The simple incident in history or fact in science, coming as a stimulus, falls upon subtler and less stable ground in the form of imperfectly isolated mental processes; it calls up details that are novel to the matter under consideration; imagination is evoked, and, as a consequence, there appears under the stern historic fact an intense display of emotion, or an intricate under-current of ideas: the thunder becomes the voice of a deity, the sun a chariot, and the wind a rustling of strong wings. It is very possible to see how this power of imagination may be cultivated and fostered into perfection by study and education, and how it may be imitated by those in whose minds it may not exhibit itself spontaneously; and at the same time it is most important to remember that the poetic faculty is not limited to those alone to whom the world has granted the name of poet, and whose numbers are comparatively small. They represent, indeed, but a select minority. It is not necessary that an ode must be written, or an epic poured forth, before the possession of a faculty for poetry can be granted. For every writer of song there will be a multitude of listeners, who, if they fully appreciate the music he utters, must be allowed to possess some of the graces of the singer; for there is in poetry a property to receive as well as a power to create.

If the essential character, or diagnostic point of the poetic mind depends upon this defect in organisation, this imperfect ability to give in the brain physical expression to external objects and conditions, the poet's mind must be regarded as abnormal. And so certainly it is, and such is the character of the organic defect or peculiarity, that inference would lead us to expect abnormalities in other than those simple intellectual properties of the mind to which attention has so far been exclusively given; and to look out for some traits of peculiarity in those which have reference to morals, to judgment and to society. As Lord Macaulay says, in a remarkable passage in his essay on Milton, "Perhaps no person can be a poet, or can enjoy poetry, without a certain

unsoundness of mind, if anything which gives so much pleasure ought to be called unsoundness." But, in studying the lives of those who have obtained the universal credit of being poets, the evidence that their power of organically registering certain mind movements is lax, and not conducive to the proper isolation of the various stimuli to which the brain may be subjected, becomes most marked. It may safely be stated that no body of men, eminent in the intellectual world, present so much eccentricity, and so much irregularity in actions, mental, social and moral, as is disclosed by the lives of those eminent in poetry. Of course exceptions are both numerous and varied, but in the following remarks poets will be spoken of as a body, without reference to individual instances.

The intellectual equivalent of this organic flimsiness, which has been described as the distinguishing feature of the poetic brain, is irregularity and uncertainty of result. That precision, that order of arrangement, that machine-like regularity, which may be regarded as the property of the normal mind, is but feebly represented in the case in question. It is unnecessary to draw attention to the frequency with which the poetic faculty is spoken of as a frenzy, and the poet as a madman; and although such expressions are no doubt exaggerated for the sake of effect, still they have much significance, and are utterances from the mouths of men capable of judgment. In personal habits the eccentricity of some members of this class of men is notorious, and has been the subject of limitless satire and remark. Much of this comment may certainly be unjust, and much of the satire unmerited and overstrained; but when the personal aspect and habits of any special class of men are selected by a voice, more or less popular, as being peculiar, that peculiarity must at least be considered as founded on some modicum of truth. In moral and social matters the same capriciousness and want of order and of uniformity is evident in a number of instances sufficiently large to demand attention. Without lengthening the present paper by examples, it may be only necessary to mention the following characters, which will be found repeated over and over again, although in varying degree, in the histories of poet's lives. The grossest immorality and wildness of living in the one case, and a hermit-like love of the most unsocial seclusion in the other; marked capriciousness of temper, subtle and uncertain, aroused by trivial acts into

disproportionate fury on the one hand, and capable of displaying a more than womanly gentleness on the other; an affection for schemes that appear to have no other recommendation than their impracticability; a dislike of formality or exactness; an apparent inaptitude in many cases of acquiring any precise method of intellectual action. Perhaps no more absurd theories on religion, politics and science have been propounded, generally speaking, than have been expressed by poets, unless it is necessary to make exception of those actually insane; and lastly, in how many cases with the details of which we are familiar have the domestic lives of these men been abnormal and marked by peculiarity and strangeness of conduct? All these traits just mentioned are exactly such as might be imagined to arise from the organic peculiarity above described; but at the same time, it must be borne in mind that these traits are very far from being peculiar to poets, that they are apparent in those individuals in very varying degrees, and that many men exhibit some one or other of those mental peculiarities which have been above described, and yet do not display the poetic faculty, at least not in an evident degree.

The poetic function is exhibited in many other instances where the same unsoundness of mind is even a more prominent feature. Perhaps of all persons in the world children are the most imaginative, and in a sense the most poetic; and it is important to observe that the great and distinguishing feature of a child's mind, its hesitancy of action, its lack of distinctiveness and character, its want of order, method, and exactness, is in each case to be explained by the imperfect organisation of the mental processes that are concerned, which apart from all other considerations, we may consider as occurring in a young brain in a condition of rapid increase and development. At puberty again, the faculty is often very prominent; how many tons weight of sonnets have poured forth from female seminaries, or how many odes and epics and poetic effusions of all kinds have been gushed forth by budding youth, no man can estimate. But it is just such a condition as one might infer to exist at such a time, for at puberty the mental functions are in a state of considerable activity, new bodily properties are being developed, new views of life acquired, and new prospects of existence opened. Such views and prospects will of necessity be ill-defined and vague, as a study of a boy's notions of love and marriage will but too absurdly prove,

and consequently the bulk of ideas that are likely to be prominent at such a time will be ill-defined and imperfectly organised, and the slightest stimulus will set into action a number of centres ill-distinguished, and but feebly isolated ; and the result will be that grotesqueness of idea, that absurd loftiness of thought, and that exaggerated ambition which so often find vent in expressions that, if they do not at least merit the general epithet of poetical, are at least to be considered as outcomes of what may be regarded as a temporary poetic faculty. Then again in many cases of insanity, where the prominent feature is often a total inability to retain or organise impressions, expressions will often be uttered, which may be certainly considered as imaginative, it not absolutely poetical. The fancies, delusions and hallucinations of the insane are often singularly impressive ; their origin can often be traced to definite excitants, and their existence considered with justness to be due to a given stimulus falling upon ill-defined centres, and producing equally ill-defined and mingled results. In such cases, there is no will to direct such results, no judgment to estimate their significance, no intelligent reason to distinguish the beautiful on the one hand from the grotesque and horrible on the other.

Lastly, it is to be observed that exact methods of study, the pursuit of rigid scientific knowledge, and the constant dealing with stern facts and definite mental processes tend to deaden the poetic faculty, to render it less exuberant and its display less spontaneous. Pegasus, when harnessed to the plough shaft, soon loses the use of his wings. That this decadence would follow is to be assumed ; for the constant and perhaps compulsory use of clearly defined mind processes will tend to render all organisation in the nervous centres more perfect, to promote a distinctness of idea, and a more exact method of thought, and indeed, to bring about that general structural condition which is the least favourable for the display of this most excellent faculty.

On some Indications for the use of Digitalis in Acute Mental Disorders. By G. HUNTER MACKENZIE, M.D. (Edin.), County Asylum, Gloucester.

In the following brief contribution it is proposed to bring under notice a class of cases of mental disorder in which digitalis has been administered in this asylum with marked apparent benefit, and to deduce from them a few indications for its successful employment. This is not inclusive of instances of insanity complicated with, or dependent on, heart or other physical disease, in which ordinary medical experience has shown digitalis to be of great service as a therapeutic agent.

The cases, and the indications they afford, may be conjointly considered as follows:—(1), As to age; (2), variety of insanity; and (3), condition of the vascular system, with special reference to the vaso-motor nervous system.

1. *Age*.—The drug has been of most service in patients from about 18 to 30 years of age, and, on the other hand, has signally failed in middle-aged and elderly cases; in fact, in instances of senile insanity, the writer has not as yet had what may be considered a single fairly satisfactory result from its use. This is probably dependent on two causes—firstly, on the rigidity and atheromatous condition of the senile arteries interfering with the physiological action of the drug on the peripheral vascular system through the medium of the vaso-motor nervous centre; and, secondly, on a disinclination to push the remedy to the same extent as in the case of healthy arteries and capillaries on account of its cumulative action and the great tendency of the increased arterial tension to produce premature rupture of the atheromatous cerebral capillaries. Of the two, it appears that greater importance should be attached to the first.

2. *Variety of Insanity*.—The most successful cases have been examples of acute mania in women, of short incubation, the patients not being markedly anæmic, and generally with associated amenorrhœa. The amount of success attendant upon its use seems to follow the rule applicable to most remedies, and to be in inverse ratio with the duration of the malady. In cases of acute melancholia and chronic mania very indifferent results have been obtained; and instances of recurrent mania are more satisfactorily treated by subcutaneous injections of morphia.

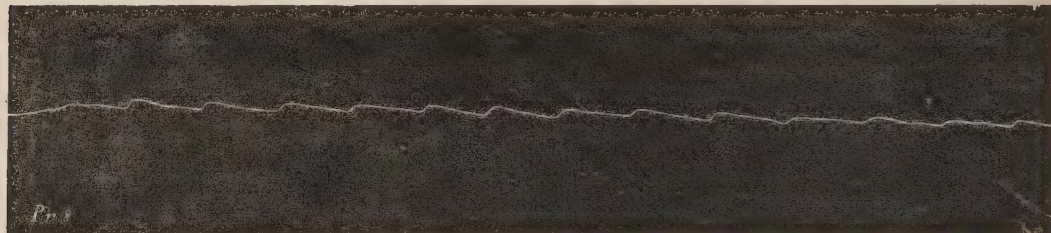
3. *Condition of the Vascular System.*—As already stated, it is not intended to discuss here the applicability of digitalis to cases of insanity complicated with heart disease. It is only proposed to note the state of the peripheral vascular system as evidencing the condition of the vaso-motor nerves, and affording the most important indications for the use of the remedy. These indications may be shortly summarised as follows:—A quick, small pulse, not under 100, and generally beating more nearly 120 per minute, in the sitting posture; evidences of capillary (vaso-motor) disturbances, as shown by successive contraction and dilatation of the capillaries of the face and external ear, with alternations of heat and cold over the whole body. The pupils are generally in a state of medium contraction, though occasionally dilated; there are recurring noises in the head and ears, the flushing and pallor of the face are sometimes excessive, and there is frequently great irritability. In such instances there appears to be a primary derangement of the sympathetic nervous system, most probably one of irritability succeeded by partial transient paralysis, having as effects a disordered cerebral circulation and consequent mental disturbance. It is probable that it is partly, at least, from its action on the vaso-motor nerves that the beneficial effects of digitalis accrue, for where the vessels have their elasticity and contractility diminished—as in cases of senile insanity—and are thus rendered less susceptible to its action, beneficial results are not attained. With a view, then, to the successful administration of this remedy in insanity, it is important to determine whether the mal-nutrition of the brain is associated with degeneration of the coats of the blood vessels—as in senile insanity—or whether functional (vaso-motor) derangement alone is present, as in the cases now under notice. In the latter only is the administration of digitalis likely to prove beneficial.

As to the Mode of Administration.—It has generally been found that 5-10 minims of the B.P. Tincture three or four times daily, administered until the pulse has fallen from 110-120 to 60-70 per minute, has been the most satisfactory method. With this fall in the number of pulsations are associated an increase of strength of the cardiac contractions and augmented arterial tension. In this asylum the exhibition has always stopped short of intermittence or irregularity; but should these ensue, owing to exaggerated inhibition of the pneumogastric, the drug should be at once discontinued. The use of this remedy should, of course, not preclude the employ-

ment of the various general adjuvants necessary to the successful treatment of all cases of insanity.

Appended are two cases of Acute Mania, showing their progress under treatment by digitalis:—

1.—M.A.B., female, æt. 20, unmarried; admitted 22nd September, 1877, suffering from acute delirious mania of one week's duration. Presents the symptoms already enumerated of sympathetic atony, with reduplication of the second cardiac sound at the basic area, and amenorrhœa. On the 24th her pulse gave the following tracing:—



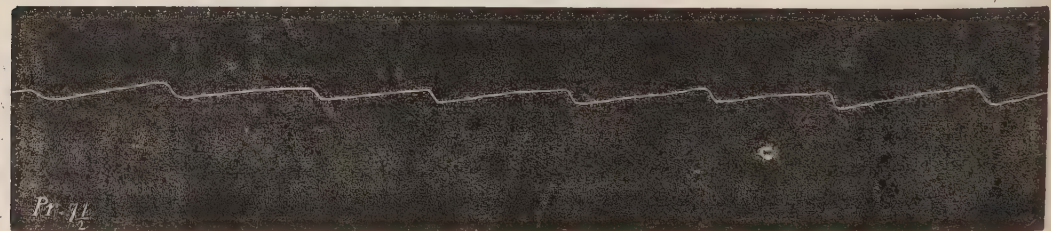
On the morning of the 25th she commenced to take Tinc. Digitalis, *ms.* 5, every four hours during the day, and twice during the night (if awake). Was also ordered extra nourishing diet. On the evening of the same day the following tracing was recorded:—



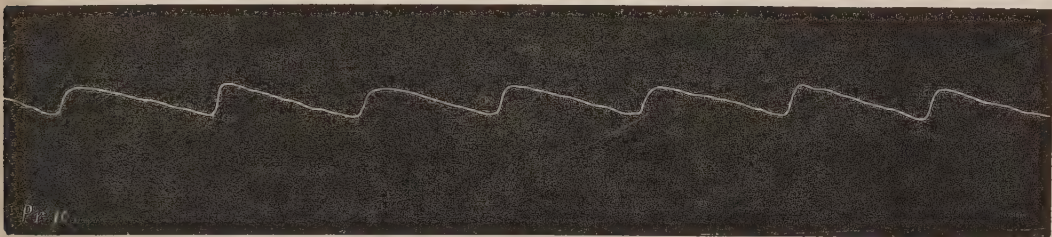
29th September.—Reported by nurse as being a little quieter, and as taking her food very well. The following tracing was taken:—



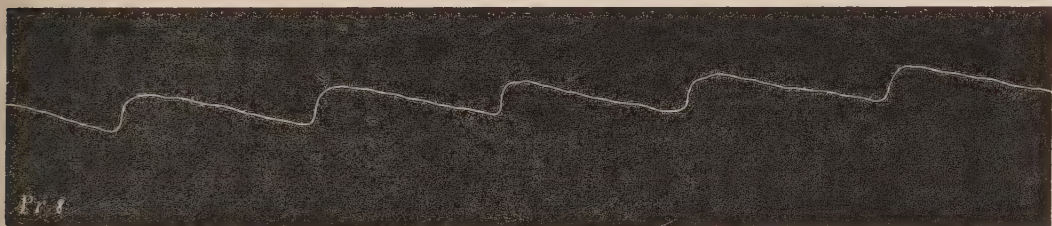
10th October.—Since last report patient has had several destructive and impulsive attacks; has also suffered from a slight attack of diarrhœa. Feeds very well. Tracing to-day:—



29th October.—Marked improvement has now set in; patient is at times, however, still a little restless and excited. Has delusions in reference to the truth of the Bible. Amenorrhœa still present. Ordered pill aloes and iron, gr. 10 every other night. Tracing recorded:—

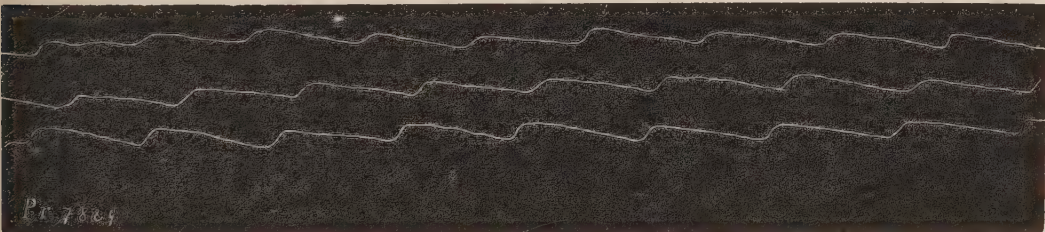


5th November.—Improvement still continues: patient has commenced to make herself useful in ward work. Tracing recorded:—



10th November.—Stopped digitalis; is now quite well mentally. Treatment for amenorrhœa still being continued.

5th December.—Improvement continues. Tracings recorded (no digitalis):—



1878.

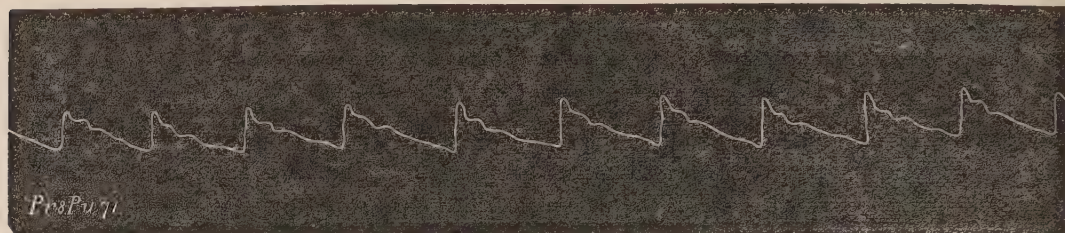
15th January.—Menstruation has commenced.

14th February.—Sent out on trial.

22nd April.—Discharged recovered. (A letter from patient reports her condition as very satisfactory.)

Remarks.—The results of treatment in this case were witnessed in the diminished pulse rate, increased cardiac contraction, and augmented arterial tension, which corresponded with a condition of progressive mental improvement. Under the digitalis the pulse never assumed a perfectly healthy character, as may be seen by comparison of the tracing taken on the 5th November with that now subjoined,

and recorded from the radial artery of the writer by the same instrument* :—



The tracings recorded on the 5th December, after the cessation of the administration of the drug, show that the pulse had slightly relapsed, but with this there was no corresponding relapse of mental symptoms.

2.—M.A.W., female, æt. 18; admitted 28th January, 1878, suffering from acute delirious mania of three weeks' duration. On admission, had a quick pulse (108), undefined heart sounds at aortic area, pupils equal, and in medium dilatation; face flushed and hot, temperature normal.

1878.

15th February.—Commenced Tinct. Digitalis *ms.* 5 every four hours.

8th March.—No marked improvement in mental condition; doubled the dose of digitalis. Pulse 100, small. Patient has persistently refused the application of the sphygmograph.

24th March.—Pulse 86. Patient is now decidedly better. Suffers from amenorrhœa. Ordered *R. Mist. Ferri. Co. 3ss. ter in die.*

24th April.—Pulse now 64; fair strength. Has greatly improved since last report. Menstruating scantily. Stopped the digitalis.

8th May.—Sent out on trial. Pulse 64; fair strength.

20th May.—Admitted from on trial, having relapsed. Pulse on re-admission 100. Is in much the same mental condition as on first admission.

Remarks.—This case is recorded as an instance of a relapse, probably from the too early discontinuance of the drug, and the home surroundings of the patient not having been altogether favourable to her maintenance in health. The treatment is now (May 24th) being continued as on the previous occasion.

In the successful cases the most marked feature was the close correspondence between the subsidence of the mental

* It should be noted that the great pressure applied in the tracings is about double the normal amount, and was rendered necessary by a peculiarity in the sphygmograph.

symptoms and the improvement of the pulse. The results shown and illustrated in the first case were similarly indicated in other instances, and tend to demonstrate the value of the discriminate employment of digitalis in insanity.*

The Measure of Individual and Social Responsibility in Criminal Cases. By DAV. NICOLSON, M.D., Deputy Superintendent, State Criminal Lunatic Asylum, Broadmoor; formerly Senior Medical Officer, H.M. Convict Prison, Portsmouth.

(Continued from page 25.)

The Responsibility of Society : The Preventibility of Criminal Lunacy.

III.—We come now to the third issue raised at the outset of this inquiry, viz. : Was the man Jackson insane both when he made the homicidal attempt and when, five days later, he took his own life ?

In the absence of all medical testimony, opinion respecting the man's mental condition during the period in question must be based upon the ordinary evidence brought forward at the inquest. And it so happens that, notwithstanding the remarkable finding of the jury, the conclusion at which most people would arrive, after perusing the evidence and the incoherent statement found in the handwriting of the deceased, is simple enough, and quite within the scope of ordinary non-professional opinion. Thus, the "Daily Telegraph," in reference to the case, relates the circumstances and the evidence, and then says: "After all this, it is impossible to avoid the conclusion that the assailant of Mr. Hamburger was not altogether responsible for his actions. We may even go further, and say, although the jury were of the opinion that there was no evidence to show what was his state of mind, that the deceased was decidedly insane" when he attempted to murder Mr. Hamburger. It is sufficient for my present purpose to affirm the correctness of the opinion here quoted from a lay paper, without entering into such details of the evidence as might be taken either for or against that

* For further observations on this subject, see articles by Drs. Lockhart Robertson and Duckworth Williams in Numbers 48 and 56, Vols. ix. and xi. of "Journal of Mental Science."

opinion. I look upon the case itself as an example of that socially dangerous form of insanity which, having its beginning (possibly enough) in some *real* circumstance of an untoward nature, becomes gradually developed from a personal grudge or grievance into a fixed idea or a morbid notion, which ultimately assumes the altogether unwarrantable proportions of a positive delusion. The history of the case affords a further illustration of that association, or at least contiguity, of suicidal with homicidal ideas, which so often reveals itself in minds whose unsoundness leads up to death-dealing. Here we have the suicidal act exceptionally remote—five days—from the homicidal attempt. Such points are, no doubt, of very great interest; but the record of the case has, for us, a significant teaching from a *social* point of view.

The case of Jackson is but an illustration of a class of occurrences that are only too frequent; and we are led to ask the following all-important question: When a person becomes insane, and irresponsible for himself and for his actions, what becomes of his hitherto responsibility?

The antagonism which we have seen to have prevailed in Criminal Courts between the representatives of medicine and of law was in many cases inevitable, from the varying standpoint taken up by the two professions. This species of antagonism tended rather to lead away from the question at issue, and to foster the feeling that, abstractly, the point for each profession was to prove, or to assert, the rightness of its own principle, and hence to maintain that the case under discussion was a further illustration of the truthful application of that principle.

What I wish to insist upon is, that when the question of responsibility in criminal cases arises, it is not merely a legal question, and not merely a medical question, but essentially a *social* one, and, therefore, both legal and medical. Legal opinion and medical opinion are the complement, the one of the other, in the broad social question as to what constitutes insanity and what irresponsibility. When we talk of the legal and of the medical relations of insanity, we refer not only to the relationship existing between states of insanity estimated from a legal standpoint and states of insanity estimated from a medical standpoint, but also to the relationship which those two estimates have to the true interests of society generally.

Although, in dealing with offenders where the question of

insanity is raised, both professions have those interests as their final aim, they have a different starting-point from which they work out their case: the physician works up from the particular to the general, the lawyer assumes the universal application of the abstract rule.

The physician, with his experience of the manifestations of insanity, takes disease as his starting-point, and seeks to estimate its value as a disturbing influence in the conduct of individual members of a community governed by a certain code of moral and social obligation. The lawyer, beginning at the other end, sets out from the standard of moral and social requirement, and asserts and maintains as his guiding principle that all men are sane and responsible for their actions until, in individual cases, they are proved not to be so. And they are both right—the lawyer and the physician—the former in maintaining the interests of society in general upon the prescriptions laid down for his guidance, and the latter in supporting the same interests, by an experienced estimate of the value of conduct in individual cases. In all ordinary (non-criminal) cases the two professions are found to be at one on the subject, for the law provides that no individual shall be deprived of his personal freedom by removal to any sort of lunatic asylum without a medical certificate of his insanity. But, in the case of criminal offenders, where the plea of insanity is set up, this oneness of opinion becomes interrupted by difficulties arising from the twofold starting-point and mode of approach which I have indicated. It is quite possible that, to the detriment of society, the votaries of either profession may carry their principle or their conviction too far; and hence, while legal and medical opinion are the complement of each other, they serve at the same time as wholesome checks upon one another in dealing with the responsibility or irresponsibility of accused persons. So that, *up to a certain point*, the antagonism which we have seen to exist in this matter is not only inevitable, but necessary, and even healthy. The real point to be sought in the apportionment of criminal responsibility is where medical science will not, by urging the presence of disease, do so to the prejudice and injury of the self-protective interests of society, and where law, the exponent of those interests, will not press her prerogative to the undue and unconstitutional harm of individual members of the community. To hit this point, or to come anywhere near it, there must be found some common ground, or consentaneous principle, upon

which law and psychological medicine can harmonize in the matter of criminal responsibility. The possibility of establishing such a basis of agreement as will satisfy the requirements of society on this score is not now so remote as it was some years ago.

An investigation into the bearings of this subject will not only be useful and interesting in itself, but it will be a needful and fitting prelude to a practical dealing with the question which I have proposed, viz. : When a person becomes insane, and irresponsible for his actions, what becomes of his hitherto responsibility ?

The use of the term *Responsibility* brings us face to face with a chain of conditions and ideas which compels us to go back in some measure to first principles, in order that we may have something of a clear start as to the nature of the groundwork upon which it is purposed to conduct the investigation. For this purpose, I cannot do better than make use of the terse and accurate language of Professor Bain in his work on "*Mental and Moral Science*."* At page 455 he says : "Government, Authority, Law, Obligation, Punishment, are all implicated in the same great Institution of Society to which Morality owes its chief foundation, and the Moral Sentiment its special attribute. Morality is not Prudence nor Benevolence, in their primitive or spontaneous manifestations ; it is the systematic codification of prudential and benevolent actions rendered obligatory by what is termed penalties, or punishment ; an entirely distinct motive, artificially framed by human society, but made so familiar to every member of society as to be a second nature."

Again, at p. 403, speaking of "*Moral Agency*:" "The word 'moral' is ambiguous. As opposed to physical or material it means mental, belonging to mind ; in which signification a moral agent is a voluntary agent, a being whose actions are impelled by its feelings. It is no part of moral agency, in this sense, that there should be any suspension of the usual course of motives ; it is necessary only that the individual being should feel pleasure and pain, and act with reference to those feelings. Every creature possessing mind is a moral agent. In the second meaning, moral is opposed to immoral or wrong, and is the same as 'right.' This is a much narrower signification. When Moral Philosophy is

* Longmans : 1st Edition, 1868.

restricted to mean ethical philosophy or duty, 'moral' means appertaining to right and wrong, to duty, morality. In this sense a moral agent is one that acts according to right or duty, or else one whose actions are made amenable to a standard of right and wrong. The brutes are not moral agents in this signification, although they are in the preceding; no more are children, or the insane . . . A moral agent is usually said to be a responsible or accountable agent." In responsibility "there are assumed (1) law or authority; (2) actual or possible disobedience; (3) an accusation brought against the person disobeying; (4) the answer to this accusation; and (5) the infliction of punishment, in case the answer is deemed insufficient to purge the accusation."

According to the same authority, punishability (carrying with it, in a well-constituted society, responsibility) is amply vindicated by granting two postulates. The first of these is human society, and the second is the uniform connexion between pain and action for avoiding it.

This applies to the normal condition of things in a well-constituted society.

Where, from mental disease, this connexion between pain and action for avoiding it is incomplete or broken, we have a deviation from the normal state of things in the relationships of individuals to the duties required of them by society; and this defective state of mind may have been original as in the idiot, or of later occurrence as in persons who become insane. Insanity, therefore, is a condition which annuls one of the two postulates upon which the punishability of individuals can be vindicated. And if, thus, insanity does away with punishability, it cancels responsibility; and it follows that the insane are irresponsible for their actions.

Morality, as we have seen, is the prescription of social authority, rendered obligatory upon every citizen under the spur of pain or punishment. In this relation moral agency becomes responsible agency, and the law is the institution by which punishment is inflicted upon responsible agents for the offences or crimes which they have committed.

From what has been said it will be understood that the uniform connexion between pain and action for avoiding it is the psychological hinge upon which the question of responsibility turns. What is termed "right and wrong" stands in correlation to pain or punishment, and a due appreciation

of the former is the warrant upon which the latter is inflicted. To know right from wrong is to know that wrong-doing brings pain (or punishment), and that the avoidance of wrong-doing will avoid the punishment meted out for wrong-doing. The knowledge of right and wrong, therefore, is one part of the hinge, and the other consists in action—implying of course the power to act—so as to avoid wrong-doing. Hence the knowledge of right and wrong, and the power to act with reference to that knowledge are the very essence of responsibility; and in particular cases, if we are able to show that either of these conditions is absent, we must be held to have established also the absence of responsibility in the individuals concerned. Now this, I affirm, is a legitimate conclusion from data given by one of the highest authorities in mental philosophy, and by one who cannot in the least be said to be biassed in favour either of medical or of legal teaching on the point.

The existence of these two essential elements of responsibility has been the cause of all that is unfortunate in the differences between lawyers and physicians; and for this reason, that each body has been too apt to seize upon one of the elements, and, if not positively to exalt it on high to the exclusion of the other, at least to assert its pre-eminence and its all-sufficiency for the establishment of a particular opinion. Thus the lawyer, cognizant that the presence of a knowledge of right and wrong was necessary to the existence of responsibility and punishability, did not care to go further, but declared himself satisfied that if an individual knew right from wrong at the time he committed an act, he must be held responsible for it. And the physician, more or less ignoring or overlooking the fact that a knowledge of right and wrong is (in law and generally) a necessity in the evolution of responsibility and punishability, busied himself with establishing from his experience the truth that *irresponsibility* does not depend alone upon the absence of that knowledge, but upon the want of power to act with reference to it. The progress of scientific observation and the lessons taught by legal and medical experience have served to bring about (or as nearly as possible to bring about) an adjustment of this needless difficulty. We saw in the first chapter how insufficient the legal dictum of a knowledge of right and wrong was as a test of criminal responsibility; and we saw, too, how that insufficiency had made itself manifest to the legal mind itself, as well as the declaration to this effect on the part of

eminent judges. The effect of insisting upon a knowledge of right and wrong as the sole test of responsibility was that society was often compelled to repudiate the ruling of the judge, and juries were constrained, as Lord Blackburn forcibly expresses it, to "take the bit in their own teeth;" the consequence being that verdicts were returned which discredited the law, and detracted from the dignity of the Judicial Bench.

If legal authority has thus been irresistibly drawn away from its tenet, what is the new position that it is inclined to take up?

I have already referred to the Bill introduced into the House of Commons in 1874 by the late Mr. Russell Gurney, with the view of amending the law of homicide. That Bill was drafted by Sir J. Fitzjames Stephen, a most competent authority; and on the part of the subject with which we are at present concerned, it suggested for enactment that "Homicide is not criminal if the person by whom it is committed is at the time when he commits it prevented by any disease affecting his mind

- (a). From knowing the nature of the act done by him;
- (b). From knowing that it is forbidden by law;
- (c). From knowing that it is morally wrong;
- (d). From controlling his own conduct.

But homicide is criminal, although the mind of the person committing it is affected by disease, if such disease does not in fact produce some one of the effects aforesaid in reference to the act by which death is caused, or if the inability to control his conduct is not produced exclusively by such disease. If a person is proved to have been labouring under any insane delusion at the time when he committed homicide it shall be presumed, unless the contrary appears, or is proved, that he did not possess the degree of knowledge or self-control hereinbefore specified."

The proposed amendment of the law is a virtual addition, qualifying the dictum laid down by the judges in reference to the McNaughten case, and nullifying its universal application as a test of responsibility. Taken on the proposed alteration, the complement of *responsibility* in criminal cases consists in the person—(a) Knowing the nature of the act done by him; (b) Knowing that it is forbidden by law; (c) Knowing that it is morally wrong; (d) Being able to control his own conduct. In the matter of responsibility and punishability, this is neither more nor less than a return to our old postulate of a

uniform connexion between pain and action for avoiding it; or (so to express the same thing) between the knowledge of right and wrong, and the power of acting with reference to that knowledge. And, approaching it from the other side, if disease of mind prevents a person from knowing the nature of the act done by him, from knowing that it is forbidden by law, from knowing that it is morally wrong, or from controlling his own conduct, in short, if disease of mind prevents him from knowing right and wrong, or from acting in accordance with that knowledge, he is irresponsible.

The law, dealing with criminal acts completed (and not merely possible), is occupied rather with wrong-doing not avoided than with right-doing avoided; so that, with the power of choosing implied, it directs itself, more especially, to the power of choosing to act so as to avoid wrong-doing, *i.e.*, the power of resisting wrong doing, the power of *control* in the matter.

Hence on the new reading of the law it would be thus: The sane criminal knows right from wrong, but chooses to do, and does wrong; and, so knowing, and choosing, and doing, his responsibility is established; but to establish irresponsibility in the insane person who commits a criminal act the knowledge of right and wrong must be absent, or if it is present he must be shown to be incapable, from mental disease, of controlling his own conduct with reference to that knowledge.

The Lord Chief Justice of England, in his written statement to the Committee appointed to inquire into the proposed amendment of the law, says, "The present Bill introduces a new element (of irresponsibility), the absence of the power of self-control. I concur most cordially in the proposed alteration of the law. having been always strongly of opinion that, as the pathology of insanity abundantly establishes, there are forms of mental disease in which, though the patient is quite aware he is about to do wrong, the will becomes overpowered by the force of irresistible impulse; the power of self-control, when destroyed or suspended by mental disease, becomes, I think, an essential element of responsibility."*

Although the new teaching has been tacitly sanctioned on

* It has been remarked that, while "the intrinsic weight of this opinion can scarcely be over-estimated," the phraseology of it is "not marked with the usual lucidity and precision of the writer." Query; would the meaning of the last clause be made more clear if it ended thus—"essential element of consideration in the question of responsibility"?

numerous occasions both before and since the Bill was drawn up, the cases are necessarily fewer in which English judges, in their summing up, have explicitly instructed the jury in accordance with it. The following report of a charge of Lord Chief Justice Bovill may be given. It was in the case of an American surgeon, who was indicted at the spring assizes at Kingston in 1872, for murder, and acquitted on the ground of insanity:—"If any one in his right senses kills another, he is *primâ facie* guilty of murder. And *primâ facie*, every person must be presumed to be in his right senses, and therefore to be responsible for his acts. But this applies only in the absence of evidence of unsoundness of mind; and there is evidence here that the mind is unsound. Then it is so difficult to trace the workings of a mind which is unsound, that the presumption no longer applies; and if the evidence satisfies you that the prisoner, at the time he committed the act, was not in a state to distinguish right from wrong, *and was not capable of controlling his actions*, then he would not be responsible for the act he committed, and you would find a verdict of not guilty on the ground of insanity."

Again, in the case of Sarah E. Drew, tried at Maidstone, in 1865, for the murder of her child, the Judge (I believe Mr. Justice Mellor), is reported to have "suggested to the jury whether, taking the evidence of the prisoner's mother in connection with that of the doctor, they were not satisfied that the prisoner at the time she committed the act was *labouring under an influence over which she had no control*." The jury, without hesitation, acquitted her on the ground of insanity.

The concession of the law upon this point brings the legal relations of insanity not only within the range of the philosophical basis which I have submitted on the authority of Professor Bain, but it would also harmonize those relations with medical experience and teaching.

In his Lectures on the "Medical Jurisprudence of Insanity," published in 1850, Dr. Robert Jamieson, of Aberdeen, says—"If a special test of insanity were to be insisted upon, the power of self-control, as being the true index of responsibility, would seem to be better than that of the integrity either of consciousness or conscience. Had the lunatic, at the time of committing the deed, a knowledge that it was a criminal one, and such a control over his actions, as might, if exerted, have hindered him from committing it?"

"Responsibility," says Dr. Bucknill, "depends upon power, and not upon knowledge and feeling, and a man is responsible to do that which he can do, not that which he feels or knows it right to do." ("Unsoundness of Mind in Relation to Criminal Acts, 1854.") The same authority, in his "Lumleian Lectures,"* of the present year—lectures full of grasp and suggestiveness—refers to the proposed alteration of the law in the following terms:—"What more can be wanted than this comprehensive declaration, which would seem in itself to furnish a succinct and complete statement of the law of irresponsibility on account of disease affecting the mind, and which could scarcely need any further development in terms, if it were only wisely acted upon in the full spirit of Lord Justice Blackburn's dictum that, 'in every individual case you must look at the circumstances, and do the best you can to say whether it was the disease of the mind which was the cause of the crime, or the party's criminal will.'"

Dr. Orange thus speak†:—"The formula proposed by Sir J. Fitzjames Stephen possesses what is, to my mind, one conspicuous amendment. He expressly desires to introduce the principle that inability to control the conduct, if caused by any disease affecting the mind, ought to carry with it irresponsibility. This appears to me to be really the essence of the whole matter. It is curious to observe that, although conduct is the one thing with which the law is concerned, yet that, in this question of insanity, the legal tests have hitherto dwelt so entirely upon knowledge and beliefs, and have altogether omitted all mention of conduct."

Dr. Maudsley, speaking of the duty of physicians in the matter, says—"Recognizing the obvious difference between him who *will* not, and him who *cannot* fulfil the claims of the law, it is their function to point out the conditions of disease which constitute incapacity." ("Responsibility in Mental Disease.")

I extract the following from Dr. A. S. Taylor's work on the "Principles and Practice of Medical Jurisprudence." (Churchill, 1873) p. 577:—"Most medico-legal writers agree that the best test for fixing responsibility on a person who has committed a crime is, whether at the time of its commission he had or had not sufficient power of control to govern

* "Insanity in its Legal Relations."—"Lancet," April 13th to May 11th.

† The Present Relation of Insanity to the Criminal Law of England.—"Brit. Med. Journal," Oct., 1877.

his actions. Was his mind so disordered that he had lost that power of control which is possessed by a person in a sane state?—or, as Mr. Stephen puts it, in popular language, Was it his act? Could he help it? Did he know it was wrong?" ("Criminal Law," p. 91.)

If it were necessary, or useful to our present purpose, there would be no difficulty in showing that the experience of medical men and jurists of other countries corresponds very closely with our own.

If, as I think, it has been sufficiently demonstrated that the formula postulated by philosophy is borne out by the practical experience of medical science, and by the authoritative sanction of the law, we may be assured that we have found the object of our search, viz., the consentaneous principle, or common ground upon which the varied and discordant estimates of criminal responsibility may be harmonized. This being so, we have also reached a platform upon which the merits of individual cases may be investigated without unseemly clashing and recrimination, and with much less risk of shock to the public feeling in the results arrived at.

Having thus worked out a generally-acknowledged test, by which responsibility and irresponsibility are distinguishable, and bearing in mind that human society, as an institution, is one of the two postulates upon which the abstract idea of punishability (raising the question of responsibility) can be vindicated, I now pass on to a brief consideration of a further phase of the general subject, viz., the broad relations, *quoad* sanity and insanity, existing between the aggregate of human beings which we call Society, and the individual members who go to make up that aggregate.

The *mens sana*. We say that one man is sane, and we say that another man is sane, but the mental furniture of the one may be very different indeed from that of the other. A ploughman has a very different cast of mind, has a very different mental individuality from a Lord Chancellor: yet he is to be reckoned equally *sane*. They are each to be considered as equal to the moral, social, domestic and other responsibilities of their respective spheres. They are both responsible beings. Because the ploughman has not the Lord Chancellor's wisdom, we are no more to say that he is insane or comparatively less sane than his lordship, than we would say that the latter is physically unhealthy or diseased if he cannot perform Hodge's work at the plough or in the

harvest field. Seeing, therefore, that we cannot test the sanity of the ploughman and of the judge by the same measure of mind, it is evident that, on mere psychological grounds, there is no absolute standard of sanity. Sanity is not an abstract entity; it is nothing more than a relative term.

If it is only a relative term, of what are the factors of relationship made up?

However much our knowledge of a particular mind may be assisted by an acquaintance with what passes through it, it is not upon such transitory workings or inward phenomena that what we call "Sanity" is estimated. Our estimate is based upon the outward actions, behaviour, and conversation which express, as it were, the *ultimatum* of those mental operations (we, ourselves, it being remembered, forming our opinion at an arbitrary standard, more or less authoritative, of our own). The relativity of the term "Sanity" will, therefore, be found to consist of the attitude which mental action, in its outward expression, bears to the prevailing and recognized standard of morality, whether optional or obligatory. And the existence of some standard of moral duty and conduct is a necessary evolution from the social aggregation of human beings. The sanity, or otherwise, of an individual is tested by a standard of correlation between his outward mental manifestations and the totality of his social surroundings. In short, the factors of relationship in the question of sanity are, firstly, the *individual* who thinks and acts; and, secondly, *society*, which sees and judges.

Every human action, however trifling, and however grave, and no matter whether it be the action of a sane or of an insane person, carries with it its measure of responsibility. It is not at all necessary for us to enter upon the specific grounds which determine the sanity or insanity of particular cases. The machinery of the social organism, however complex, is the fitting means by which a decision is arrived at; and in criminal cases the decision of law and authority must be accepted as final, inasmuch as the subsequent disposal and treatment depend on it.

So long as a man is sane, he is accountable for his actions, whatever they are, and must be held responsible for them in his own person. Society has established certain rules for regulating the life conduct of her members, collectively and individually, and she demands, as the very essence of her existence, an adherence to those rules, any departure from

which she views with the utmost jealousy. In the ordinary transactions of life, a sane man stands in the estimation of other men, or of the general public, according to the course he takes up or pursues. If he deviates from an upright course of conduct, a corresponding suspicion and avoidance meet him. If he offends against the laws of his country, and is convicted and imprisoned, he acquires the stigma attached to such conduct, and the responsibility still resting with him, he becomes more or less a criminal.

The condition, *non compos mentis*. *With the loss of sanity, and when from mental disease a person is prevented from knowing right and wrong, or from controlling his own conduct, his personal responsibility ceases.* This proposition is now accepted, I may say, on all hands; but people are apt to forget to carry to its conclusion the inference to be drawn from it, and that conclusion is the answer to the all-important question that I raised early in this chapter. They acquiesce in the dictum that the insane are irresponsible for their actions; but they do not always care to go further and say: "But if all human actions have their measure of responsibility, and if the insane are not responsible for their actions, who is responsible for them?" Who should it be but the second, the other, factor of relationship, *society*—society in its collective capacity.

In order to the due carrying out of the heterogeneous functions and requirements of the great social fabric, many sub-divisions of authority and labour, and many subordinate ramifications of interest are a recognised necessity. Hence the burden of responsibility for the actions of the insane is thrown more immediately upon the relatives, friends, and neighbours of the lunatic, and upon all who in any way come in contact with him. But although this is so, there is no doubt that the collective responsibility rests ultimately with society at large, whose duty and self-interest it is to see that proper provision is made for the care and treatment of the insane among her members. *Society thus becomes answerable for all lunatics alike.* No matter under what description they come, whether they are rich and well provided for by affectionate relatives, or whether they are poor and friendless, she becomes the kindly sponsor of every lunatic, whether he be imbecile, melancholic, maniac, epileptic, or what not. Nor is her kindly sponsorship less binding upon her with the so-called criminal lunatic who, *subsequently to the invasion of the insanity*, and, therefore, after the transfer of the responsi-

bility from him to society, is allowed to commit an act of more or less criminal import. Indeed, seeing that it is the duty of society to ensure that all lunatics are properly looked after, whether for her own or for their safety and comfort, a special responsibility rests upon the community in regard to criminal acts committed by the insane.

I have now arrived at the essentially practical portion of my subject, which is to show that *a large proportion of our criminal lunacy is preventible*, just as, by the adoption of vaccination, and other precautionary measures, we have largely succeeded in holding small-pox in check.

If a law were to be passed to-morrow, enacting that for the future no person was to be vaccinated, and that no one was to be shut up in an asylum or in any way deprived of his freedom, can any reasonable person for a moment doubt what, sooner or later, the result would be? There might be some, few indeed, (anti-vaccinationists) who would require time to estimate the *rationale* of the increase of small-pox; but the most sceptical of individuals would not have long to wait for evidences of the irregular and outrageous deeds and of the criminal acts of some portion of the unconfined lunatics. While the proof of the value of vaccination in preventing or restricting small-pox can be demonstrated only over a wide field, or in reference to a comparatively large number of cases, the proof of the preventibility (to use a convenient form of word) of criminal lunacy is demonstrable, not only in the aggregate, but also, and with irresistible clearness, in individual cases. That is to say, *with the means at our disposal in each case*, we can say with more certainty that such and such an insane person could have been prevented from becoming a criminal lunatic, than that such and such a person could have been prevented from contracting small-pox.

The proofs, then, of the preventibility of criminal lunacy are of two sorts, those which are general and those which are derived from a study of actual and individual cases.

I shall first address myself to proofs that are of a general character.

Of course we have, first of all, the broad fact that all insanity is to some extent preventible, if means are taken in time to deal with such conditions and circumstances as may be urging individuals on to it; and if proper measures (of treatment) are taken in the earlier stages of the disease. And, necessarily, with the reduction of the area and the intensity of insanity in general, there would be a reduction

in the potential criminality of insane persons, as well as in the actual number of criminal acts performed by them.

Again, under such a hypothesis as that already mentioned, where the law prevented lunatics being shut up, the result would be certain, and, therefore, of the nature of a general proof.

If Government were to order the unconditional discharge from Broadmoor of all criminal lunatics whose name began with A, there could be no question at whose door the responsibility would lie if these lunatics were to commit crimes on their discharge. Nor would the location of responsibility be at all doubtful in the event of criminal occurrences arising therefrom, if the Committee of Visitors were to set at large from a county asylum all the patients who had been resident over five years. Nor would such location be difficult in the case of a Superintendent, who, by his recommendation, effected the discharge, from the Institution under his management, of all troublesome and viciously-disposed lunatics.

It may be said that these are only hypothetical examples, but being based upon pre-existent actualities, viz., the confinement (deemed necessary, and, therefore, legalized) of the various groups of lunatics referred to, they are useful illustrations of the distribution of responsibility, where criminal acts are, or are likely to be, committed by lunatics under the circumstances given. They serve, moreover, to show how, in the normal and proper administration of their functions the Government, the Committee of Visitors, and the Superintendent, are, respectively, the instruments whereby some amount of possible criminal lunacy is prevented.

But to come to something more positive; there are cases where, in opposition to the advice of the superintendent of an asylum, and in spite of his warning, the friends of patients insist upon and effect their discharge under a promise that they will be properly cared for; a promise which may, no doubt, be meant kindly, but which, after a time, is neglected or overlooked, the result being that the particular lunatic commits murder or suicide, or both. Again, a considerable group of criminal lunatics consists of individuals who had suffered from previous attacks of insanity, and had either recovered at home, or had been discharged as recovered or relieved from asylums. There are cases where, from carelessness or lack of proper supervision, the advance of a fresh attack remained unnoticed, and was allowed to go on until

the disease ended in a preventible act, which converted an ordinary into a criminal lunatic. The blame in such cases rests usually with the individual's relatives or friends, who undervalue the meaning of symptoms and of conduct which they know to be unnatural, if not actually dangerous. And sometimes the medical man fails to note the gravity of the case, and to put the friends upon their guard against the possibility of mischief.

But the most painful and perhaps the most preventible group are the puerperal cases of criminal lunacy, which are so often due to positive neglect or unkindness in the nursing after childbirth. The neglect may not be intentional, but in a woman who has shown previous signs of depression or tendency to insanity, the functional commotion she has undergone, and the anxiety and foreboding produced by altered physical and domestic relations, are apt to drive her past herself, and raise up in her mind terrible ideas and temptations. Fully conscious of the guilty and evil tendency of her thoughts, she, at such times, dreads to be left alone, and pines for the companionship of some or any person, so that another "will" than her own may, by its presence, strengthen her resistance to the fearful suggestions of murder and self-destruction. As regards the prevention of criminal acts in cases of puerperal insanity, I do not know that the influence of Lying-in Hospitals and of proper nursing, where the patient is not left to herself, has ever been estimated.

If we were to tot up the amount of crime committed by lunatics under such circumstances as those above named, where relatives, friends, medical advisers, and neighbours stood socially responsible for them, we would speedily realize how largely preventible the criminal phases of lunacy are, and how grave the *duty* of society becomes, in regard, not only to the proper care of the insane, but also to its own safety.

I shall now record some individual instances which will bear out the truth of my general proposition, and also show some of the numerous points at which notes of warning are held up, and by the thoughtful observance of which great social benefit would result in respect of painful and preventible criminal occurrences. These records are, for the most part, taken from newspaper accounts of the respective trials, &c.

1.—T. W., murdered his mother, and with the aid of an axe and a knife, severed her head from her body. This man had been an inmate of Bethlehem, and also of an asylum at Wandsworth, from each of which places he was removed, out of mistaken affection, by the mother, although he was pronounced by the several authorities of those asylums to be uncured and dangerous. “Under such circumstances,” says the paper, “it is extremely unfortunate that he was allowed to go at large, *particularly as the dangerous tendencies of his insanity were apparent to every person round him.*”

2.—C. W., a soldier, had become melancholic, for which he was taken into hospital for observation. No prominent signs of insanity showing themselves, he appears to have been looked upon by the army surgeons as to some extent a malingerer, and was discharged from hospital. He then shot a comrade in order that he might be hanged for the deed, being at the time undoubtedly insane.

3.—E. P., tried for sending threatening letters to persons of high rank and authority. Had been discharged from an asylum as cured. The physician of the asylum stated that, while there, he *considered the prisoner a dangerous lunatic.*

4.—Rev. E. R., indicted for maliciously inflicting grievous bodily harm, and found not guilty on the ground of insanity. The prisoner made an incoherent speech in court.

The Lord Chief Justice (to prisoner)—“Before the magistrates you pleaded ‘not guilty’ on the ground of insanity. There are persons now in Court who are prepared to give evidence on that point. Do you wish them to be called?”

The prisoner—“No, my Lord; I prefer to be treated as a sane man.”

The Lord Chief Justice (after the verdict)—“It may be a satisfaction to you, gentlemen, to know that he has been in a lunatic asylum for five years, and was let out, not as cured, but only as ‘relieved.’ It is quite clear from all the circumstances of the case, that, when the act was committed, he was not in his right senses; and it is proper that he should be put under restraint, for when such a man, in such a state of mind, goes out with knives in his pocket, intending to use them (he had threatened to stab), it is necessary for the safety of other people that he should be restrained.”

5.—J. V., murdered his housekeeper by shooting her. Had been discharged from an asylum about a year previously. In connection with the circumstance, the Superintendent wrote as follows:—“It is stated that V. was discharged from this asylum, a statement which might convey the impression that such discharge was the act of the asylum authorities. I therefore beg leave to state that his *removal was effected solely by his relatives, and in opposition to my strongly expressed opinion that he was dangerous to himself and others.*”

6.—R. P., cab proprietor, was charged with having wounded his wife, by cutting her in the neck with a carving knife, with intent to murder. Mrs. P. was examined, and stated that some months before

this affair occurred, the prisoner had asked her to send him away, but she did not wish to do so, as she thought she could do better for him herself. He had been in an asylum before he married her, and his twin brother became insane four years before. The surgeon in attendance said he had advised that P. should be sent to an asylum, and that his wife and relatives had prevented his being sent. P. had made an attempt to hang himself.

7.—G. W., a superannuated postman, was charged with murdering his son, aged 10 years, by striking him on the head with an axe. A son of the prisoner, in answer to the magistrate (Mr. Hannay), said that his father had been in a low, desponding state for some time, and that for the last month he had been on his guard, as he thought the prisoner might be dangerous. *The medical certificate said he was not dangerous.* Mr. Hannay said “that the state of mind of the prisoner was a question for a jury. It was a great pity that the son or the friends of the prisoner had not gone to some public functionary and made known the state of mind of the prisoner, and then proper steps would have been taken to have prevented him doing harm either to himself or any one else. Had the relieving officer refused to have interfered, and the matter been brought judicially under his notice, the man would have been examined by order of the Court, and if he had been found to be deranged, he would have been taken care of in the proper asylum.” These remarks were made in reply to a question put by a surgeon in behalf of the prisoner’s friends.

8.—L. E. A., married, was charged upon an indictment with the wilful murder of her child, and found not to be in a fit condition of mind to plead. “Two medical gentlemen, who had known the prisoner for a great many years,” were examined, and they proved that “twenty years previously she had attempted to destroy herself, and that she had also made an attempt to drown another child, and two days before she committed the act of which she was now accused, she had attempted to drown the same child. At this time it was stated that she was undoubtedly insane, and a certificate had been signed authorizing her removal to a lunatic asylum.”

9.—M. P. committed suicide by throwing himself on the London and South Western Railway, and suffering decapitation. The day before he had written to his wife, saying he meant to commit suicide, but returned home in the evening. The police knew of his threat, and the Coroner is reported to have “expressed his surprise that the policemen did not communicate with the relieving officer, in order that deceased might have been taken charge of as a lunatic.”

10.—The following extract from the “Times” (Nov., 1874), shows the uncertain and wandering life led by lunatics who are not taken care of, and whose career becomes in consequence very much that of a criminal:—

At Greenwich, Robert Duffin, aged 35, of High Street, Forest Hill, Sydenham, was charged with being a dangerous lunatic and unfit

to be at large. It appeared that at a quarter to seven o'clock on Sunday morning Mr. Abel, proprietor of the Dartmouth Arms, Forest Hill, was awoke by the screaming of his children. On getting up he found the prisoner had gained access to the house by getting over a back fence, had been in the children's bedroom, and was then in the passage with an iron rod in his hand. The prisoner immediately rushed upstairs and locked himself in a back bedroom. The assistance of the police was then obtained, and Rogers, 18 P Reserve, went to the room and called on the prisoner to open the door. The prisoner replied that if he opened the door and came in he would give him something, and the constable then went downstairs to Mr. Abel to obtain his sanction to force the door open. On returning to the bedroom it was found that the prisoner had made his escape into a lumber-room, and taken up the side of an iron bedstead. Shortly afterwards he was secured. Police-sergeant Bull, 1 P, said the prisoner was the son of a very respectable person at Sydenham. In April, 1867, he was convicted at the Central Criminal Court Sessions of horse-stealing, and was sentenced to seven years' penal servitude. In 1873 he was liberated from Millbank prison on a ticket-of-leave, and subsequently he was found by the police and charged with being found wandering and supposed to be a lunatic. At that time he was sent under remand to the Lewisham Union Infirmary for some days. He afterwards went to the Sydenham police-station and assaulted Sergeant Fox, for which he was sentenced to two months' imprisonment. Upon this conviction the remainder of his former sentence was enforced, and he was only discharged from Pentonville Prison on Friday last. There was no doubt, the witness added, the prisoner was a dangerous lunatic. Mr. Patteson remanded the prisoner for a week to enable the surgeon at the gaol to certify as to the state of his mind.

11.—One Saturday, in December, 1875, Robert Edwards was admitted in the Norfolk and Norwich Hospital for "dyspepsia." On the Sunday morning he seemed to the House Surgeon "very nervous and irritable, but nothing to excite any suspicions." On Monday morning he battered in the skulls of three boy patients with a big pair of tongs, and injured two others by the same means. The rules of the hospital provided against the admission of persons "afflicted with insanity," and on the Governors' form of recommendation this is stated. I cannot do better than give the following extract from an article in the "Norfolk News," of 25th December, 1875, headed, "The Hospital Case—Who is to blame?"

"When a terrible tragedy like that which has so painfully affected the public mind during the past fortnight occurs, the question is forced upon us—Who is to blame? The unhappy man now in Norwich gaol awaiting his trial on the charge of wilful murder was manifestly not 'responsible' when the deed was done. There is a universal agreement on this point. No one doubts he was in a paroxysm of insanity at the time, and had lost all control over his actions. The

case of Robert Edwards is pitiable in the extreme. He was conscious of the disease which affected his brain, and sanely felt the insane working within him. He had horrible thoughts, and warned those around him to take care of themselves, because he could not ensure himself. He begged them to remove dangerous things, and put them out of his reach. His hands were tied at his own request, and when kindness relaxed the ligature he asked them to tie his hands again. He prayed earnestly that the Almighty would 'back him with all His Almighty power.' Such was the condition of mind of this unfortunate within less than two days of his being brought to the hospital. He was 'afflicted with insanity' beyond a doubt—manifestly, as the Curate, Mr. Wright, admits. No one could talk with him without seeing it. The ailment grew worse in the last few weeks of his residence at home. The weak man was madly strong at times and violent. He became, in fact, a dangerous lunatic. The parish knew the fact; the parish officers knew it; the neighbours knew the full particulars of it; Mr. Morton, who attended him, knew it."

It would appear that Edwards had always been a weakling more or less; but that for several months before the affair happened he had been actually insane, and in the dangerous state just described. He was attended by a medical man, and every one—the whole parish—knew that he was suffering from insanity, and that he was very dangerous and homicidal. "When a person becomes insane and irresponsible for his actions, what becomes of his hitherto responsibility?" If he commits a criminal act, *who* is responsible for him? or, in ordinary phrase, *who is to blame?* As regards this particular case it would be difficult to say who is not to blame, for every one knew of his condition, and the man ought long before to have been removed to the proper care and supervision of an asylum. In this case, criminal lunacy of a preventible sort was not only not prevented but positively fostered.

12.—Who was to blame in the following? The red-hot poker was of course nothing! but the pocket-knife—was it a bait?

"A shocking scene has occurred at Ely Workhouse. On Sunday a butcher named Briggs, who was awaiting removal to a lunatic asylum, seized a red-hot poker from the fire and thrust it several times into his body. He then rushed at the attendants, who fled, one of them dropping a pocket-knife, with which the maniac cut his throat. He died on Monday."—"Globe," January, 1876.

13.—Just too late! W.M., a law writer, committed suicide. For some months he had been very strange in his mind, and the doctor had advised his wife to keep dangerous things away from him. On the night in question, after the deceased came home from his employment, he asked her for his pen-knife, a peculiar one about four inches long, which she had put out of the way. *She gave it to him,* and he cut his throat. Arrangements had been made to get him into Bethlem Hospital, and he was to have been taken there on

the day on which the inquest was held. Was that man, who was clearly insane, and who evidently had suicidal and possibly homicidal inclinations, a fit person to be at his employment, and moving about in the street among other people, by himself?

14.—W.W. had been in the asylum. A few weeks after his discharge he cut his wife's throat and his own, but both recovered. It appears that all his neighbours were "in constant fear of him on account of his strange and wild manner." He was seen to be sharpening a knife he had bought the previous day, and his wife was warned to be careful of him. There surely would have been no difficulty in having this man again removed to an asylum in time, and so have prevented the criminal act of attempted homicide. He had been in an asylum on more than one previous occasion.

15.—C. R. murdered her child in 1877 by cutting its throat, being at the time insane. "In 1861 she attempted her own life by jumping into a cistern. In the spring of 1864 she attempted to destroy one of her children by putting it on the fire. In the spring of 1873 she made another attempt to commit suicide, and her friends then feeling that she could no longer be trusted to be at large, she was confined in a lunatic asylum. Whilst under treatment there she attempted to hang herself with a window cord. After seven months' treatment the unfortunate woman seemed to have recovered her normal reason and was discharged."

16.—A. N., *a few days after her discharge from an asylum*, murdered her child, whose head she was alleged to have severed from its body. This woman was intensely suicidal, and according to the evidence of her counsel had been five times confined in different asylums. A woman of this sort ought surely to be kept in an asylum, or if discharged some one ought to be held responsible for her.

17.—E. H., married, was confined of her first child before she was seventeen, at the house of her grandmother, who was deaf. During the evening of the day on which the child was born a powerful and irresistible feeling came over her that she must destroy it. She struggled against it for half-an-hour, and called out loudly for her "granny," who was in another room. But no one came, and she strangled the infant. With people of the poorer classes it will be said such risks must be run; quite so, but that does not do away with the responsibility which rests upon society for the safety of her members. If society is responsible, it has duties in connection with that responsibility. If this girl was to turn out a lunatic (whether temporarily or permanently) there can be no doubt that the criminal act in which her lunacy culminated was due to the accident of her grandmother being deaf. "All's well that ends well" leaves things at haphazard. But here things did not turn out well; hence the query, was a deaf grandmother the proper nurse in such a case, and with such risks?

It is useless as a matter of proof in such a manifest pro-

position to go on relating cases, for if the examples given do not establish the position I have taken up, no number will. Taking it, therefore, as proved that some portion of our criminal lunacy is preventible, we thereby establish the positive and practical responsibility of society whose duty it comes to be, through its numerous subordinate agencies (relations, friends, neighbours, &c.), so to interpose its authority, and at such time as to prevent the performance of criminal acts by insane and irresponsible members of the community.

There has recently been issued the Report of a Select Committee of the House of Commons appointed to "inquire into the operation of the Lunacy Laws, so far as regards the security afforded by it against violations of personal liberty." In the report the Committee express their opinion that although the present system is not free from risks which might be lessened, though not wholly removed by amendments in the existing law and practice, yet assuming the strongest cases against the system were brought before them, allegations of *mala fides* or of serious abuses were not substantiated.

It appears to have taken a large amount of investigation, time, and patience to arrive at this negative, though satisfactory, conclusion. But personal *liberty* is one thing and personal (and social) *safety* is another; and the law has to do with both. And we are in this position, that while the operation of the Lunacy Law may be taken to afford sufficient security against violations of personal liberty, the same security against violation is not extended to personal safety; *i.e.*, society takes care that no sane person shall be deprived of his liberty by a false allegation of lunacy, but the same care is not taken to prevent unmistakable lunatics from criminalizing themselves by committing murder and other offences against the law.

The existence of a social as well as an individual responsibility is not to be doubted; and the one is the complement of the other; so that there is established a continuous line of responsibility for all human actions, whether sane or insane. And the transfer of responsibility to society from an individual when he becomes insane gives us a secondary or supplementary test which might be made useful in extenuating criminal responsibility. Society has the right to remove a lunatic from his freedom and place him under the control of some person or persons selected for the

purpose, *i.e.*, society may impose restraint upon a lunatic; and if upon any lunatic, most assuredly upon one whose tendencies are dangerous.

Well, in seeking some criterion of responsibility in criminal cases, it has been customary to deal with the double question:—1. At what point does the responsibility of an individual cease? 2. At what point does the irresponsibility of an individual begin? By filling up the balance of responsibility in human conduct and making a continuous line of it, we have a third mode of approach opened up to us in the question: At what point does the responsibility of society begin? Although the discovery of the point referred to in the third question may inform us that it corresponds with that of the second, yet in our *search* for the point the third question involves different resultants in criminal cases where the plea of insanity is set up. These resultants come out somewhat as follows: At what point does the responsibility of society begin? At what point is society responsible that an individual member is not permitted to commit a criminal act? At what point is it the duty of society to take action in the matter? At what point ought society to restrain an individual? And in the particular cases: Had the point which warranted restraint been reached, *i.e.*, ought the individual to have been confined, or at least placed under proper supervision, as a lunatic, before the criminal act was committed?

It is not my intention to proceed further with question here: but I may quote from a leader in the "Daily Telegraph" of 27th July, 1875, a sentence which bears very closely indeed, and aptly, upon the point—"Broadly it may be laid down that when a man is insane enough to warrant us in putting him under restraint, we are hardly justified in hanging him because the negligence of his friends has allowed him to be at large" (and to commit murder).

Before concluding, there is just one point in the social relations of criminal lunacy to which I would refer. When the question of the estimate for Broadmoor Asylum came up in the House of Commons on the 16th of July, 1877, Mr. Ramsay, the member for Falkirk, took exception to the "expenditure of so much of the public money on a *very worthless part of the community*."

This is a false start unless he can prove that the Atten-

dants and the rest of the staff are a very worthless part of the community; for the excess of expenditure at Broadmoor over that of ordinary asylums is taken up *not by the patients personally*, but by the larger staff which the special nature of the place demands, and by the better pay given in order to secure men suitable for the work, and up to the standard required by the Civil Service Commissioners. But are the inmates of Broadmoor a very worthless part of the community? If their worthlessness depends upon their criminality, the term ought to be transferred to the community itself; for, having been insane and irresponsible before they were criminal, the fault of their becoming criminal lay in the community not doing its duty by them. *The patients at Broadmoor certainly do not belong to what are called the criminal classes.* To suppose that they do is a common error. (I speak of criminal lunatics detained during her Majesty's pleasure.) They do not belong to the higher or middle classes of the community; nor (before their offence) do they belong to the pauper class. Remembering that insanity spares neither the rich nor the poor, is it not strange that one of the most unpleasant phases of it should limit itself, for the most part, to one (what may be called the "poorer") social region, and avoid the two extremes? And so it is—but then so much of the question of criminal lunacy is a *social* one in its relations. When a lunatic has money or has friends to pay for him, he is generally looked after in time and taken care of when the insanity becomes established. And so with the pauper who is removed to an asylum. But the bread-winning father of a family cannot afford to give up work and lie by or seek a change in time, he struggles on for the sake of the "little ones;" or in other cases, the relations do not take heed in time. At all events, owing to the want of proper care, the seriousness, and perhaps the dangerous nature of the insanity is misjudged until a dreadful act (perhaps) establishes the gravity of the mistake, and the individual has become qualified as a "criminal" lunatic.

It is an ill-conceived injustice to call such people by names which as lunatics they do not specially merit, especially when we recollect that they are "more sinned against than sinning." The expenditure does not go to their "worthlessness." It is traceable to the fact that they are worth keeping in safe custody, and that it is worth while to prevent them from laying violent hands upon those about them or upon each other.

Listen to an extract from the Report of the Committee of Visitors of the Hants County Lunatic Asylum, where the weekly expenditure per head was raised from 9s. 11d. to 11s. 1d.:—

“Two most dangerous male patients have this year been transferred to Fisherton House Asylum. One, a criminal lunatic, was transferred by a Secretary of State’s order. He had been at Knowle (Hants Asylum) two months, and was most dangerous to all who approached him. When not actually in seclusion, it required three persons to guard him. The other, a transfer from Colney Hatch Asylum, had twice attempted Dr. Manley’s life, and he also required to be watched by several attendants when not secluded. The charge for *these patients is twenty shillings a week each, but had they continued at the County Asylum, they would have cost even a larger sum than this*, in consequence of the number of attendants who were required to watch them, as either of them would assuredly have taken the life of any person had they had the opportunity of so doing.” It is not for a moment pretended that the four hundred male criminal lunatics at Broadmoor are as actively violent as this, but it must be borne in mind that while violence, and lawlessness, and destructiveness are actually exhibited in a varying proportion, these are the potential characteristics of any one of them. I cannot think that society can wish the expenditure of such a place reduced beyond the limits of safety—from escapes and from extensive personal injury.

Apart from all question of expenditure, the centralization of criminal lunatics at Broadmoor may be shown as effecting and likely to effect a large social gain by the increased opportunity which it affords for the study of the relation of lunacy with crime, and of the nature of the earlier departures from states of sanity towards conditions of dangerous irresponsibility. If the public purse must be spared in the matter of expenditure, let society effect the reduction in the way that is at once the most humane, the most safe, the most proper, and the most efficient; let her be assured of the preventibility of criminal lunacy, and let her work out her purpose of economy on the principle that *prevention is better than, in fact, is, the cure*.

CLINICAL NOTES AND CASES.

An Account of Two Cases of Locomotor Ataxia, with Mental Symptoms simulating those of General Paralysis. By J. W. PLAXTON, M.R.C.S., Eng.; with a Pathological Report by W. BEVAN LEWIS, L.R.C.P., Lond., West Riding Asylum.

Two cases illustrative of the above interesting combination of symptoms have recently come to their close in the West Riding Asylum. The mental ailment in both cases was characterised by exaltation of idea, and in both also the course of the disease was marked by closely similar phases leading up to the somewhat rapidly fatal termination. The following, in a condensed form, are the leading facts as regards the history and clinical features of the cases as recorded more at length in the Asylum Case Book:—

CASE 1.—William L., æt. 47. A marble sculptor. Admitted Nov. 3, 1875. The history obtained of him was to the effect that he had been ataxic in his gait for nine years. His mental symptoms were said to have appeared about six weeks before admission, and the causes given were, the illness and death of his wife in this asylum (it is a noteworthy fact that she died of general paralysis), and failure in his business. The symptoms of aberration of mind had been an attempt to seduce his niece, and a constant desire to be after women in a more or less irregular fashion, no such tendency having been at any time previously observed. In addition he had been unable to do his work properly, and had spoiled much marble. He had also become slovenly and even dirty in his habits. Had always been a sober man.

When admitted he displayed no special delusion or hallucination, but a decided moral twist, inasmuch as he could see no wrong in the attempted seduction of his niece. His judgment, too, was faulty, for he believed himself capable of as good work as ever. His memory was accurate.

The ataxia was far advanced, and it is remarked that common sensibility and susceptibility to pain was abolished in both legs, as far as the knees. He had occasional spasmodic movements of the limbs, but no tremor except in the eyelids. The ophthalmoscope showed no abnormality. The pupils were equal and contracted.

Shortly after his admission he developed ideas of grandeur, wealth, and power, transcending even the powers of the Genius of the Lamp of Aladdin to fulfil. After a while his excitement would disappear, and he would become comparatively rational, and then, recognising

their absurdity, any mention of his vanished delusions was distasteful. When under the influence of his delusions he would attempt the delineation of the fantastic structures of his imagining. Palaces of marble adorned with sculpture and painting, grand temples of the arts, etc., etc.

At all times he retained a belief in his ability to do his work as well as ever. He also retained his erotic tendencies, and on one occasion he was concerned for days that the object of his attraction (a nurse in the asylum) had passed him by without recognition. Exaltation, alternating with great rationality, occurred several times during his residence in the asylum.

To the beginning of October, 1877, the ataxia had made no great progress, though it was noticed that he did not draw with the same facility as formerly. At this time the closing scene of his disease was opened by the occurrence of clonic spasm of the muscles of the legs and thighs, and by a subjective feeling as of something running up and down his legs from the toes to the groin. He believed that his legs were full of wind, fæces, etc., and he began refusing his food under the delusion that it was poisoned. Apart from his delusions, he was painfully rational. From this time to his death his sufferings were horrible. In constant mental agitation and terror, suffering intense pains and cramps in his limbs and back, and utterly sleepless, except when under the influence of chloral.

On the morning of Christmas Day, 1877, his disease had taken on a new phase. Since the previous evening he had lost much of the power of voluntary motion of his arms, and his speech had become indistinct; this condition rapidly deepened into complete paralysis and coma, and he died during the day, two years and three months after the onset of his mental symptoms, and eleven years after the beginning of the locomotor ataxy.

CASE 2.—William C., æt. 36. Tailor. Admitted March 1st, 1877. It was ascertained that he had been the subject of progressive locomotor ataxy for five years previous to his admission. From the history given with him, it appeared that he had had for a year before much domestic trouble, and had been overworking himself. Nothing was noticed indicative of failing brain until ten days before his appearance at the asylum. The determining cause of his insanity seems to have been a small quantity of whisky; he was unduly excited after it, and his insanity followed immediately after. In this case also the *délire de grandeur* was the leading symptom. His fancy ran riot in all possible directions, and his belief kept pace with his fancy. There was also trifling dementia and a tendency to emotion. There was partial anæsthesia of legs and abdomen, and of the arms to the elbows. The pupils were very unequal. His speech was clear, his diction good, and his gait markedly ataxic. His delusions kept their hold on him for about a month, and then gradually subsided, but he was never entirely free from them.

At the beginning of July, four months after his admission, the bursa patellæ of one leg inflamed, without apparent reason, and before the complete subsidence of the inflammation, erythema of the left wrist and forearm, accompanied by diarrhœa, came on. This subsided quietly in a few days.

On July 11th his symptoms assumed a graver aspect. He had profuse diarrhœa during the day, with a hot skin, and a feeble pulse of 112. He was much duller mentally, and his articulation had so failed him that "yes" was the only word pronounced distinctly. The torpor deepened, and on July 13th (two days after) he was unconscious, and a constant twitching of hands, arms, and legs was observed. Temp. 104·6° resp. 40, and uneven. He died the following day. A few hours before death, and without warning, black ecchymosed patches made their appearance on the left natis and both heels—the decubitus ominous. The progressive locomotor ataxy had lasted between five and six years, and his insanity five months.

WILLIAM L—.

Pathological Reports.—Post-mortem examination held 24 hours after death. The whole brain weighs 1,360 grammes (43 ounces). There is some degree of wasting of the convolutions of the vertex in the frontal and parietal regions. The pia mater over these parts is slightly thickened, but presents *no trace of adhesion* to the subjacent cortex. The brain, as a whole, is firmer than normal. Neither the cortex or white matter presents any abnormality to the unaided vision, but the arterioles everywhere appear unduly coarse and prominent. The cerebellum, corpora striata, and thalami optici present no coarse lesion, but the medulla oblongata is found to be very decidedly firmer than normal.

Microscopic Examination of Spinal Cord (Bevan Lewis).—Sections from the fresh frozen cord exhibit a distinct wedge-shaped tract of grey degeneration throughout the posterior columns. Examined in glycerine, and by the naked eye the morbid portions have a grey translucent appearance. This distinct line of demarcation betwixt healthy and diseased regions, as well as the grey aspect of the posterior columns, is not apparent after hardening by chrome salts and mounting by Clarke's process.

Cervical Region.—Area of morbid action is limited above to the fasciculus gracilis (Goll), but extends below over greater portion of posterior columns, implicating the substantia gelatinosa and posterior root fibres. The columns of Goll are the parts most extensively sclerosed, and in the peripheral portions of this tract the ascending fibres are almost entirely replaced by coarse fibrillar connective (Fig. 2). A deeper staining of this region is found due to increase of connective and the presence of large spheroidal, non-nucleated bodies varying from 4 μ . to 18 μ . in diameter, which, with the iodine and sulphuric acid test gave the characteristic reaction of amyloid bodies.

In the fasciculus cuneatus a fasciculated atrophy of the ascending nerve fibres is observed, the sclerosed tracts extending inwards towards the posterior commissure and substantia gelatinosa. In the lower cervical regions the transverse nerve fibres of the posterior root zones have almost entirely disappeared, the posterior roots are crowded with proliferating connective cells, and the substantia gelatinosa exhibits much fibrillar, connective, and coarse vessels. The cells of the posterior cornua are few in number, small, pigmented, and atrophied. The amyloid bodies are most numerous in the regions presenting the most advanced atrophic changes.

Dorsal Region.—Columns of Goll and cuneate fasciculus implicated to the same extent as in the cervical region. Most of the nerve cells of the posterior cornua are reduced by fuscous degeneration to a pigmented mass of granules. Numerous “Deiter’s cells” in the substantia gelatinosa. As in the cervical region, the anterolateral columns appear normal with the exception of a few scattered amyloid bodies (Fig. 1).

Lumbar Region.—The sclerosis is still more marked. The columns of Goll form a shrunken fibrous tract crowded with nuclei and amyloid bodies. The morbid lesions in other regions are identical in nature (but more intense in degree) with those described in cervical region. Throughout the cord the cells of the anterior cornua are implicated to a far less extent than those of the posterior cornua.

Cerebrum.—Nothing abnormal is detected in the cortex or medulla of the brain.

WILLIAM C—.

Post-mortem examination 27 hours after death. The whole brain weighs 1,365 grammes (44 ounces). Right and left hemispheres correspond almost exactly in weight. The convolutions of the vertex, especially in the frontal and parietal regions, present great wasting and atrophy. The membranes covering the wasted regions are much thickened, but *quite free from adhesions*. The brain is extremely pale and its consistence diminished. Serous fluid to the amount of seven ounces (compensatory effusion) escaped. There is general pallor of the grey matter of the convolutions, as also of that of the ganglia at the base of the brain. The blood-vessels present their usual appearance. The cerebellum, pons, and medulla appear normal.

Microscopic Examination of Cerebrum (Bevan Lewis).—No abnormal appearance is presented to the naked eye by cortex or medulla, but sections stained by logwood, carmine, and aniline exhibit large numbers of spheroidal or slightly oval bodies scattered amongst the medullary strands of nerve fibres. They have the appearance of large swollen corpuscles devoid of nucleus and concentric rings, homogeneous in structure, and colourless, except in those preparations stained by logwood, in which they assume a light pink hue. In size they varied from 10μ . to 32μ . They are dis-

tinctly limited to the white matter of the brain, and terminate with apparent abruptness at the deepest layer of the cortex. They are distributed in a linear direction, or in aggregated clusters, and have no apparent connection with the blood-vessels. They give no reaction with the iodine and sulphuric acid test, nor are they affected by ether, chloroform, osmic acid, and other reagents. In their immediate vicinity the neuroglia is compressed, and more deeply stained than elsewhere. The nerve cells of the cortex are perfectly healthy, and no morbid change is discovered in any portion of the cortex. Throughout the substance of the pons these bodies are also observed in large numbers, and to a limited extent in the medulla oblongata.

Spinal Cord.—On careful examination of the cord in the cervical, dorsal, and lumbar regions, no morbid change is apparent in its nervous, connective, or vascular elements. With regard to the nature of the morbid lesion in the white matter of the brain, it will be seen that the description coincides in all respects with the characters recognised as indicative of a colloid degeneration.

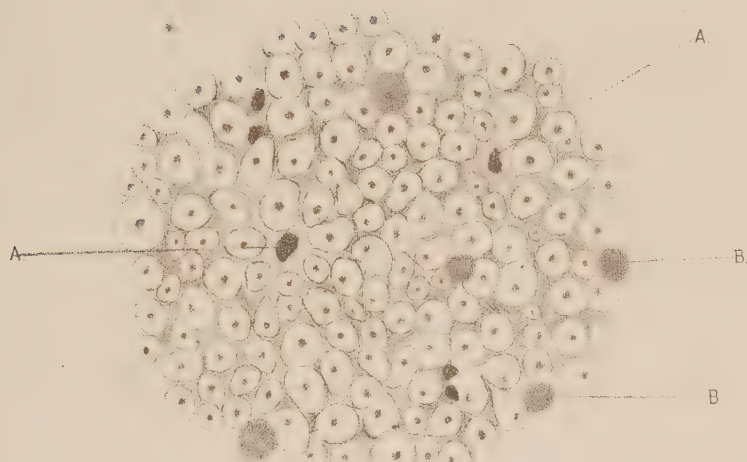
The above cases are of interest, presenting, as they did, points of resemblance in their cause, in their course, and in their close. Both were cases of mania occurring in individuals who had long suffered from locomotor ataxy, in both circumstances causing mental strain and worry preceded the invasion of insanity. In both *délire de grandeur* was the prominent symptom. In each case the extravagant delusions were wholly or in part got rid of, and in both the closing scene was ushered in by rapid paralysis and coma. In one case signs of irritative lesion of the nerves was plainly written in the acute bedsores (over the sacrum unilateral); in the inflammation of bursa and skin, and in the muscular twitchings preceding death. In neither case was there any trace of adhesion of the pia mater.

EXPLANATION OF PLATE.

FIG. 1.—Illustrative of the almost perfect immunity from disease of the antero-lateral columns, in which the only morbid change consists in the presence of a few amyloid bodies scattered amongst the nerve fibres. No increase of connective or proliferation of nuclei is detected in these columns.

FIG. 2.—Portion of the Posterior Columns of the Spinal Cord (Columns of Goll). The swollen condition of the reflected layer of Pia Mater lining the posterior median fissure is here seen. The nerve fibres are separated by wide tracts of fibrillar connective which occupy the site of atrophied nerve tubuli, and present on transverse section the finely punctated aspect shown in this figure.

Fig. 1



From Lateral Columns of Cord

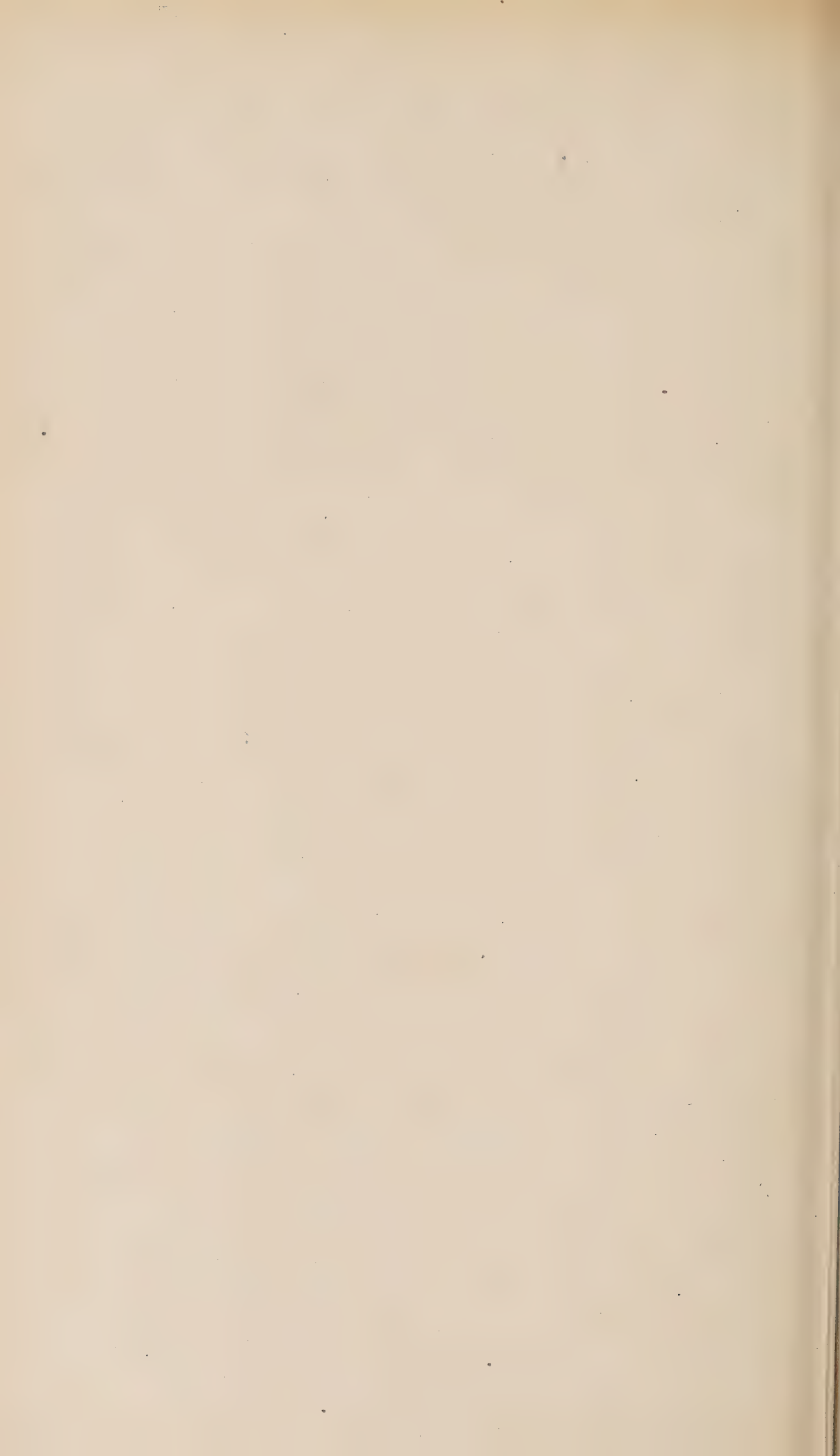
- A. Branching Cells throwing off trabecular fibres.
- B. Amyloid Bodies.

Fig. 2



Morbid Changes in the Posterior Columns of Spinal Cord.(Locomotor Ataxia)

- A. Posterior Median Fissure.
- B. Columns of Poll (Fasciculus Gracilis).



OCCASIONAL NOTES OF THE QUARTER.

The Report of the Lunacy Law Committee of the House of Commons, 1878.

Our readers are already fully acquainted with the evidence given before this Committee (See Jan. No., 1878, Vol. xxiii., p. 457). Its report has now been issued, and as it is very short, we reprint it *in extenso*. Its purport is mild, and, on the whole, those engaged in the administration of the Lunacy Laws of the kingdom, the physicians to asylums, and the British public have reason to be satisfied. The recommendations of the Committee closely coincide with the points on which, in the article referred to (p. 520), we stated there had been a fairly good case made out for alterations in the law. Of the 22 recommendations made by this Committee, 17 were advocated by us. In our opinion the chief omission in the report is a recommendation that the whole mode of administering the property of the insane in England should be reformed. We showed most conclusively, from the evidence of those persons best acquainted with its working, that the English law is, in this respect, cumbrous, inefficient, and unjust. The deficiencies of the Irish and Scotch Lunacy Laws, and their administration, pointed out by us, are ignored by the Committee. The subject of Criminal Lunacy, and the clear call that has been made out for a revision of the existing statutes in regard to it, has also been left unnoticed.

We don't think the Committee have taken as much pains or trouble in digesting the evidence or in the drawing out of its report as it did in the examination of witnesses. Before legislation is attempted, a still more careful consideration will have to be given to various points affecting the welfare of the insane of the United Kingdom which they have omitted to notice.

In considering how far the Lunacy Law affords security against violations of personal liberty, the attention of the Committee has been mainly directed to three questions:—

First, whether a possibility exists of persons being unduly deprived of liberty by means of a false allegation of lunacy.

Secondly, whether persons properly detained are placed under restraint of a nature calculated to retard their cure, and consequent discharge.

Thirdly, whether undue obstacles are opposed to their release when restored to sanity.

Upon all these points the Committee received copious evidence, which led them to the conclusion that, although the present system was not free from risks which might be lessened, though not wholly removed, by amendments in the existing law and practice, yet, assuming that the strongest cases against the present system were brought before them, allegations of *mala fides* or of serious abuses were not substantiated. Much of the evidence, which extended to a great length, amounted to little more than differences of opinion among medical men, questions of liberality or parsimony in the arrangements of asylums, suggestions with reference to the letters of patients and visits of friends, or complaints of hesitation among superintendents and relatives to believe in the perfect recovery of patients.

Instances of the detention in asylums of persons who might be discharged were given, suggestive of wrong-doing, which subsequent investigation materially qualified.

It was admitted that many of these persons were not sane, and that they could not safely be discharged unless they had friends who would be responsible for them. And with reference to the charge that paupers were frequently sent to asylums in cases of ordinary mental enfeeblement when they ought to have been retained in the wards of workhouses, the Committee are of opinion that such proceedings, though irregular, and liable to objections on the ground of expense, could hardly be called injurious to the patients themselves, except (if, indeed, this be an exception) by removing them farther from their homes and friends, if they have any, and were sometimes resorted to for the sake of other inmates who were annoyed by the habits of those who were imbecile.

The Committee cannot avoid observing here, that the jealousy with which the treatment of lunatics is watched at the present day, and the comparatively trifling nature of the abuses alleged, present a remarkable contrast to the horrible cruelty with which asylums were too frequently conducted less than half a century ago, to the apathy with which the exposure of such atrocities by successive Committees of this House was received, both by Parliament and the country, and to the difficulty with which remedial enactments were carried through the Legislature, while society viewed with indifference the probability of sane people being, in many cases, confined as lunatics, acquiesced in the treatment of lunatics as if they were outside the pale of humanity, and would have scarcely considered a proposal to substitute for chains and ill-usage, the absence of restraint, the occupation and amusement which may be said to be the universal characteristics of the system in this country at the present.

Nevertheless, the anomalous state of the law which, undoubtedly, permits forcible arrest and deportation by private individuals, and the fearful consequences of fraud or error, have induced the Committee

carefully to inquire whether any additional safeguards may be devised.

The difficulty which presents itself at the outset is the universally conceded importance of the speediest possible treatment of the first symptoms of derangement. This might doubtless be carried on, and, in many instances, better carried on, outside the walls of an asylum, but in most cases such would obviously be impossible, nor would an intermediate hospital, which has been suggested, effectually prevent the taint of insanity from attaching to temporary cases. Any impediment to the rapid conveyance of a patient to an asylum might in some instances render the case hopeless. In Scotland, what is called an emergency certificate, signed by one medical man, is found to work well, and evidence was given that the speedy treatment secured in this way is so efficacious, that in many cases no further certificate is required, as the patient is discharged before the expiration of the three days during which it is valid. If, however, he is detained longer, then, as in Scotland, notice should be at once transmitted to the Board, and no patient should be kept beyond three days without a fresh certificate signed by two independent medical men.

The Committee object, except in cases of absolute necessity, to those enactments in the Scotch law which allow the medical officer of an asylum to sign either a certificate of emergency or one of the ordinary certificates in the case of a pauper patient. It must almost invariably be by the advice of a medical attendant that the certificate of emergency is employed, and he would be the proper person to sign it.

In all other cases the certificate should be granted by two independent medical men. That there will even then be a risk till lunacy is more generally studied, is shown by a remarkable case in the evidence before the Committee. Anything, therefore, that would make the certificate more precise would give additional security, such as the substitution of statutory declarations for the loose statements which frequently appear upon the certificate; and in addition to the report now required after two and before seven days, a very careful statement should be prepared from the case book, and forwarded to the Board at the end of the first month. It was suggested, and the Committee think the suggestion a good one, that the order should continue in force for a limited period, not exceeding three years, and that at the end of this period a special report on the patient's state should be made by the medical superintendent, to be repeated at the end of each subsequent year. This would individualise the patient, a very desirable result in a large asylum, and direct the attention of the Commissioners to his case, and at the same time be free from the risk of exciting the patient.

It seems reasonable that the person who signs the order should state on the face of it by what right or authority he intervenes. It would, in the opinion of the Committee, tend to prevent abuse if it was required that the order should be given by a near relative, as in

Ireland, or by some responsible person who could be called to account. This would also be in accordance with the law of Scotland, with regard to the person who petitions the sheriff. Power might advantageously be given to the Board to direct the substitution for the person signing the order of any other suitable person willing to take the responsibility. It seems also desirable that the person signing the order, or some one on his behalf, should be required to visit the patient once in every six months.

The Committee are of opinion that the same procedure should apply to all lunatics, whether with or without property requiring protection, whether private patients or paupers, and whether conveyed to the lunatic wards of workhouses or to hospitals or asylums; and that the protection afforded by annual visits of the Commissioners should be extended to all classes of insane persons under detention. But they do not attach special importance to the order emanating from a magistrate, such as the sheriff in Scotland, or a justice of the peace in England, as this intervention has been shown in many cases to be merely ministerial.

If it is important that every security should be taken against the risk of a sane person being consigned to an asylum, it is scarcely less so that the treatment of insane patients while under detention should be of that kind which may most conduce to their restoration, and that their detention should cease as soon as they are no longer dangerous to themselves or others, and are not likely to be benefited by further detention. That there will be diversity of opinion upon the question of the proper time at which a patient may be discharged without danger of relapse must be expected; and as before stated, there are cases in which he might safely be consigned to careful friends, when it would be highly dangerous to expose him without preparation to uncontrolled freedom of action. Doubtless this reluctance to liberate a recovered patient may be carried too far, and the effect upon the patient himself may be prejudicial. The Committee believe that the surest mode of guarding against unduly prolonged detention consists in frequent and careful visitation of all places in which any lunatic is confined, with full power placed in the hands of the Commissioners to order his discharge, and in the more general adoption of the system of probationary release. They think that the difficulty attending, in certain cases, especially in Scotland, the discharge of patients who cannot be certified as entirely sane, but still are no longer dangerous to themselves or others, and not likely to be benefited by further detention, may be obviated by such means.

So, again, the risk of maltreatment by attendants requires constant watching. When it is considered from what class attendants are necessarily taken, how difficult it must be for them to keep their temper under the provoking habits of the unfortunate patients, which have made them insupportable to their nearest relations, and how cautiously any statements of lunatics themselves about their own

treatment must be received, it will appear that the utmost vigilance must be exercised to prevent serious abuses of this nature

Again, it was suggested, and the Committee think the suggestion a good one, that reports should be sent to the Commissioners, of patients kept under restraint in private families, or religious houses, in the three kingdoms, not for profit, provided that the reports are confidential, and the patients confirmed lunatics, and not merely suffering under temporary derangement.

Another important suggestion made was, that any person might, as in Scotland, with the sanction of the Commissioners, on showing good cause for such a step, send two medical men at any time to test the condition of any patient under restraint.

The Committee received some evidence that a shorter term of detention would often suffice in pauper cases, if the power were extended of reimbursing, out of the rates, the friends to whom they may be sent, for a portion of the expense of their maintenance. This system, however, is manifestly open to abuse, and in such cases the authorities should retain the names on their books, and should exercise a careful supervision through a medical officer.

There appears to be a general concurrence of opinion that the best security against the undue detention of patients consists in personal examination such as that by the Chancery Visitors. There seems no valid reason why the possession of property requiring protection should make any difference in the personal treatment of lunatics, or in the supervision exercised over them. Either the Chancery lunatics, who number less than a thousand, have too much care bestowed upon them, or the others, who exceed 65,000, have far too little. The property might still remain under the care of the Masters in whatever way may be considered best; but it seems reasonable that all lunatics should be treated on the same system as far as admission, detention, supervision, and release are concerned. And though it may be true that the lunacy of the majority of patients in an asylum is self-evident, yet it seems physically impossible that, with the present strength of the Lunacy Commissioners, minute supervision of those who require it can be efficiently exercised. It may be that by some amalgamation of the two departments waste of power in visiting might be obviated, and the delay and expense frequently attending the discharge of Chancery lunatics be avoided, and stricter supervision exercised over single patients who are said to require it more than others, and yet are visited only once a year by the Commissioners, and for visiting whom there is no statutory obligation.

With reference to the question of property, it was suggested that if it were possible to transfer to the Court of Chancery the administration of the property of a person who, though from his mental condition unfit to manage it, was not dangerous to himself or others, a strong temptation to the relatives of such person to deprive him of his liberty would be removed.

An opinion, which the Committee deem not unworthy of notice, was expressed, that all workhouses within certain areas should be under one management, for the sake of classification and of economy of space. It was stated, that by this system, pauper lunatic asylums might be relieved of chronic and harmless cases, which could be accommodated in particular workhouses set apart for their reception, thus obviating the necessity of enlarging asylums to an extent which some witnesses deemed antagonistic to cure; and at the same time relieving the sane inmates of workhouses from the annoyance occasionally inflicted upon them by association with such cases. The Committee think that at all events by some common action of the workhouse authorities, within certain areas, arrangements might be made for the better accommodation of chronic and harmless cases by drafting them into particular workhouses, in which suitable and separate accommodation had been provided for the purpose.

It seems unnecessary to restrict the admission, as voluntary boarders, into licensed houses, to persons who have already been patients under certificates; but the Committee think that all cases of such admission should be reported to the Lunacy Commissioners within twenty-four hours.

The Committee found the greatest diversity of opinion with regard to private licensed houses. Some witnesses urged the immediate abolition of all such houses, on the ground of the temptation to keep profitable patients longer than necessary. Others as confidently stated that such houses supplied an acknowledged want, that there was a greater percentage of cures among patients under private care than among those in public asylums, and that it was the interest of the proprietors of private asylums to maintain the character of their establishments; while in public asylums, though the temptation to detain unduly for the sake of profit could hardly be said to exist, yet that paid officials might lose personal interest in the good and careful management of these institutions. Other witnesses, again, took a view between these two extremes, and considered that no alteration of the law in this respect was necessary, but that the matter had better be left to the spontaneous action of the public; that the time might arrive when there would be sufficient accommodation in public institutions for all classes, such as exist in Scotland, in Cornwall, and at Cheadle, in Cheshire. When that time arrived it was possible that there would be no demand for licensed houses for the upper and middle classes, nor would lunatics be kept any longer in the wards of workhouses, which, it was represented, are often, especially in Ireland, most unfit for the purpose. In this opinion the Committee concur, and they would suggest that legislative facilities should be afforded by enlargement of the powers of magistrates, or otherwise, for the extension of this system.

The greater the publicity the more efficient the safeguards against undue detention as well as against treatment of a nature calculated to

retard cure. The old system of turning an asylum into a resort of sightseers has happily passed away along with other enormities. But the opposite system of total seclusion from the outside world must be as intolerable to many of the unhappy patients. The exercise in walled yards, the want of communication with friends, the sense of imprisonment, are productive of irritation and antagonistic to speedy recovery.

The Committee were told that the system of unlocked doors, the liberty of walking alone in, and in many cases outside, the grounds, and the almost uncontrolled admission of visitors, have the best effect, and though objections are made of the character of those formerly urged against the abolition of mechanical restraint, yet these regulations were being extended throughout the three kingdoms. At the same time the Committee think that there should be power of refusing admission to persons desiring an interview with a patient on business matters ; for they received evidence which led them to believe that there are cases in which unscrupulous persons have taken advantage of the mental weakness of patients for their own selfish purposes, and that such interviews have a tendency to agitate and distress the patients. The Committee, however, recommend that a statement of the grounds of such refusal of admission should be entered in the case book, and at once transmitted to the Commissioners.

Several witnesses attached much importance to the concession of greater freedom of correspondence to patients, as a valuable security against infringement of personal liberty. It was said that the power of opening letters exercised by superintendents excited the suspicion of patients ; and that it was a great hardship on Chancery lunatics that their letters were sent to the committee of the person who was responsible to no one for the way in which he dealt with them.

It was proposed that a post box should be kept in the asylum, and cleared by a public officer, but this would be objectionable on account of the character of many of the letters and the difficulty with regard to postage. The present system of the superintendent retaining those letters which are not forwarded, for the inspection of the Visitors, is said to entail great labour on the Visitors, and to occupy much of their time, which might be better employed. It is plainly almost impossible to prevent the fraudulent suppression of letters, but probably the best plan would be, that the superintendent might, at his discretion, allow letters to go to the addresses unopened, but that all not so forwarded, including those of Chancery patients, should be sent unopened to the Commissioners on the day on which they were delivered to him.

Printed notices should be affixed to the walls of the principal rooms of all asylums, setting forth the right of appeal to the Commissioners by letter, or of interview with them or the Visitors personally, and the privilege of letter-writing as above.

Every person discharged from confinement in a lunatic asylum

should, with the consent of the Commissioners, have access to all documents connected with his detention therein.

Complaints were made of the inconvenience resulting from the invalidity of certificates beyond the limits of the kingdom in which they are issued, but it seemed that any relaxation of this rule would involve an alteration in the criminal law for the purpose of punishing in one of the three kingdoms offences committed against the lunacy laws in another. Unless this alteration was made, there would be some danger to the liberty of the subject in such an arrangement. A valuable suggestion was made in favour of an international system of registration of English lunatics confined abroad, and of foreigners under restraint in England.

The Committee have now recapitulated the principal representations made to them in regard to the points referred to them, and they have set forth the conclusions at which they arrived in regard to such modifications of the present system as seemed calculated to afford more complete security against violations of personal liberty.

Some of these may be carried out by a mere change of practice, others would necessitate amendments in the statute law of the realm; under any circumstances a consolidation of the Lunacy Acts would be most desirable.

Any such changes as the Committee have indicated would, they venture to think, tend still further to improve the method already so immensely improved, of dealing with those unhappy persons who suffer under mental derangement, and would increase public confidence in a system which is not unnaturally, and perhaps not undesirably, regarded with a considerable amount of jealousy and distrust.

28th March, 1878.

Sir James Coxe on Lunacy in its Relations to the State.

We make the following extracts from a pamphlet published by the late Sir James Coxe just before his death, called "Lunacy in its Relations to the State," which is chiefly a digest of the evidence given before the Dillwyn Committee, going over much the same ground as our article on Lunacy Law in the No. of this Journal for Jan., 1878, the author stating his views in regard to many important points connected with insanity.

Medical Relations of Insanity.

Beyond all question, however, there are many cases in which a medical man is much better qualified than a man of mere ordinary culture to recognise the presence of insanity, as, for instance, where the mental aberration is due to organic disease of the brain, and particularly when the malady is in its earlier stages. In cases of general

paralysis, for example, a skilled medical man will detect the symptoms of disease long before they become apparent to an ordinary observer.

. As a rule, too, the existence of a delusion can be shown more readily by a medical man who has had experience in insanity, than by an ordinary medical practitioner, or a man of merely common education; but even here, it will generally be found that the delusion had been recognised by ordinary observers before application was made for medical advice. It is not so much, then, special medical knowledge, as special tact, derived from intercourse with the insane, that enables a man to detect a delusion; and this tact may generally be acquired by any one of fair natural ability, whether trained to medicine or any other calling, who has had the opportunity of being much in association with the insane. The great improvement that has taken place during the present century in the treatment of the insane is generally ascribed to the influence of medical men, and no one will be inclined to deny the immense services to humanity rendered by Pinel and Conolly, and those who have followed in their footsteps, among whom may be reckoned the whole band of physicians who at present preside over the management of the asylums of Great Britain. I do not, however, entertain a doubt that the law does wisely in confiding the duty of granting certificates of lunacy to medical men, partly because, as a rule, they possess better opportunities of becoming practically acquainted with insanity than the members of other professions; but, principally, because from their training and experience they must necessarily be much better qualified to discriminate between the different varieties of insanity, and to determine the proper course of treatment to be pursued in each case, whether by removal to an asylum, detention at home, or travel. Unfortunately, the study of insanity has not hitherto formed a necessary part of medical education, and many medical men, when they enter on practice, have thus no greater knowledge of its symptoms than may be possessed by any intelligent, well-educated member of the general public. But even with this unsatisfactory state of matters, the general tenor of the evidence taken by the Committee is, as we have seen, to the effect that the committal of sane persons to asylums is a matter of exceedingly rare occurrence. Whether the inverse mistake of failing to recognise insanity when it is actually present is ever committed cannot be so readily determined; but this risk would be overcome by placing medical education on a broader basis, and constituting a knowledge of insanity an indispensable requisite for obtaining a licence to practice.

The urgent necessity for this education is attested by the following as founding a fact quoted by the author:—"It is admitted that in one year of 12,175 certificates and orders, 2,314 were returned for correction." He argues strongly in favour of the Scotch system of a judicial order for the placing of

patients in asylums, and in regard to the duties of the Lord Chancellor's Visitors, he says :—

By the latest returns the number of Chancery patients is 995, of whom 676 are in asylums, and 319 in private dwellings. On the other hand, the total number of lunatics in England is stated in the last report of the Commissioners to be not less than 66,636. Thus we have the anomaly of three salaried officers being deemed necessary for ensuring the proper management of 995 patients, and six being deemed sufficient for the proper management of the balance, amounting to 65,641. But the anomaly does not stop even here, for the 676 Chancery patients who are in asylums have equally with the other inmates of such establishments the benefit of visitation by the Commissioners in Lunacy; so that only the 319, who are in private dwellings, are exclusively superintended by the Chancery Visitors. The main duty of these gentlemen, in connection with such of their patients as are in asylums, is to see that they receive an adequate return in their treatment and accommodation for the money paid for them. They have no voice in the management of the asylums. Seeing that the fact of an adequate return when once satisfactorily ascertained cannot, as a rule, require much after-investigation, it is difficult to believe that the Chancery Visitors are not too numerous for the duties they have to perform. In fact, the cost of supervision of the 995 Chancery patients considerably exceeds the cost of the whole Lunacy administration of Scotland. If the Chancery Visitors are not too numerous for their duties, then it seems to follow that the Commissioners in Lunacy must be quite insufficient for theirs, and that it is impossible they can discharge them either with satisfaction to themselves or with proper security to the public.

Counties to be Allowed to Provide for Private Patients.

It certainly does appear somewhat absurd that counties and boroughs should be required by law to erect commodious asylums for the care and treatment of their pauper lunatics, and that they should be debarred from providing accommodation for private patients, except for such as are in indigent circumstances, and whose treatment, the statutes declare, must be regulated in all respects like that of pauper patients. It would surely be a wise resolution to do away with this restriction, and to permit counties and boroughs to provide accommodation for patients of the upper classes also, if they chose to do so. There is reason to think that this permission would before long be extensively taken advantage of, and in this case the proposed *imperium in imperio* of Chancery asylums would be deprived of such small support as could at present be brought forward in its favour.

Removal of Restrictions on Early Treatment.

The fact is not disputed that the visitation of single patients by public officials is calculated to afford a valuable guarantee against

maltreatment or neglect ; but it is possible, that the benefit derived in the comparatively few cases that are reported to the Lunacy Board, is outweighed by the injury inflicted on those who may be deprived of the treatment best calculated to produce recovery, through the unwillingness of the public to act in conformity with the requirements of the statutes. So long as the evidence upon the scope and results of the Lunacy Laws is given mainly by men occupied in that special department of medicine which deals with insanity, so long will prevalent medical opinion appear to be in favour of the stringent supervision of all classes of the insane, wherever placed, and in whatever stage of the disorder ; but even in the evidence that has been quoted, there are exceptions to this view ; and there is reason to believe that if the evidence of general practitioners were taken, it would tend to destroy faith in the present system of dealing with single patients. That it would still be advisable to lay down statutory regulations under which insane persons should be dealt with in private dwellings, is a matter well entitled to consideration. But they should be of the simplest kind, and should be carefully framed not to interfere with judicious freedom in the disposal of the patient, especially in the early stages of the malady.

In the Scotch statutes more freedom is accorded than in the English, for in the former it is provided that the enactments regarding the disposal of single patients shall not apply to those cases in which a certificate has been granted by a medical man that the malady is not confirmed, and that it is expedient with the view to recovery that the patient should be removed from home for a temporary residence not exceeding six months. This limit might, I think, be very properly extended to twelve months, and if this provision were imported into the English statutes it would permit of a wise discretion in the disposal of incipient cases of lunacy. The production of a medical certificate of the kind referred to should accordingly prove a bar against all interference by the Commissioners. If there be any truth in Lord Shaftesbury's belief, that the great increase of lunatics is to be ascribed in a very great degree to imperfect treatment in the early stages of the malady, it is obvious that the removal of restrictions tending to prevent the adoption of the most efficient remedial measures would prove an immense boon, not only to the patients themselves, but to the whole community.

Prevention is better than Cure.

In the facts to which attention has been here directed there are, I fear, serious grounds for holding that our present system of dealing with lunatics is in various respects faulty. The constant increase in the official number of the insane is of itself calculated to arouse uneasiness, whether this is to be ascribed to an actual increase of lunacy, or simply to an apparent increase caused by the influence which gratuitous treatment in asylums exercises on the demand for accom-

modation. Under either supposition there is an urgent evil to be met, but the probability is that both causes are concerned in the result. Be this, however, as it may, it is only too clear that notwithstanding all our efforts, the demand for asylum accommodation continues as urgent as ever, and that the burden of the maintenance of the insane is every year becoming heavier and heavier. Such results cannot fail to suggest that hitherto we have sought the remedy in a wrong direction. The fact is that we have allowed a terrible evil to grow up among us, and that we have been content to lop the branches, leaving the growth as luxuriant as ever, instead of directing our efforts to destroy it at the roots.

That prevention is better than cure is a saying familiar to every one; but it does not seem to have been sufficiently considered that it would be possible to take measures to stop the occurrence of insanity. No doubt insanity is a mysterious malady. The conditions of a sound mind constitute a problem which has yet to be solved. Nevertheless, it is generally admitted that a healthy body is the essential requisite of a healthy mind. Maintain the health of the body, and give adequate exercise to all its organs, and you will do the utmost that man can do to secure the health of the mind. It is in this direction, then, that we must look for the diminution of insanity. No one will be sanguine enough to hope that the malady can be totally eradicated, but if there be any truth at all in the doctrines of preventive medicine and in the influences of sanitary legislation, we may confidently look forward to a great alleviation of the scourge. Man has a great deal in his power in the way of avoiding mental disease. The records of our asylums teach us that intemperance and immoral indulgence of various kinds are among the strongest factors in the production of insanity; and other causes are bodily diseases of different kinds, mostly having their origin in prolonged neglect of the laws of health. Wherein, then, is the remedy to be found? Not in State supervision, but in physical and moral training, and in qualifying every man to be the guardian of his own health. This work should be begun in the nursery, and continued in the school-room and playground, by giving enlightened attention to physical and mental training, and by imparting a knowledge of the functions of the human body and of the laws on which their healthy discharge depends. Then efforts should be made by the Legislature to place within the reach of the people the means of healthy and rational recreation, and the statutes which interfere with individual liberty in the employment of Sunday should undergo revision. In all our schools, whether for the upper or lower classes, a taste should be cultivated for out-door sports, and the young should be trained to seek for sources of pleasure in the glorious world which surrounds them—"to find tongues in trees, books in the running brooks, sermons in stones, and good in everything." In this way would the public-house cease to be the only means of recreation which the ordi-

nary working man can appreciate. The growth of towns at the expense of the country is every day placing a larger proportion of the people in circumstances unfavourable to their health, both bodily and mental; and herein is probably one cause of the ever-increasing prevalence of insanity, or rather, perhaps, of its ever-great aggregation in asylums. An insane person in a town cannot be permitted the same amount of liberty as in the country, and hence in cities removal to an asylum becomes more a matter of necessity.

On Metalloscope. By Dr. M. BERNHARDT, of Berlin. (From the "Berliner Klinische Wochenschrift," No. 10, 1878.)
Translated by E. G. GEOGHEGAN.

It is now almost thirty years since Dr. Burq first observed the favourable effect produced by the external application of different metals on patients suffering from various forms of anæsthesia. Burq remarked that the same effect was not produced by the same metal in all cases, but that the therapeutic success was due in one case to gold and in another to iron. This fact led him to assume that, in cases where one metal proved beneficial when applied to the skin, still better results might be obtained by giving this patient a preparation of the metal that suited him for internal use, and thus promoting a constitutional action. But even his first assertions met with a cold reception, and his later assertions of the success obtained by internal use of the metals received quite emphatic denial from the profession, so that the whole question fell into discredit. Nothing daunted by this, and fully convinced of the accuracy of his observations, Burq applied to the Société de Biologie in Paris, to appoint a committee to test his assertions impartially, and report on the results of their investigations. A committee, consisting of MM. Charcot, Luys and Dumontpallier, was appointed, and on the 14th of April, 1877, M. Dumontpallier, as speaker, delivered the following report:—

The first trial took place with a girl of sixteen, who had suffered for some years from hysteria. Her skin and muscles on the right side were completely anæsthetical, and an examination made by Drs. Gellè and Landolt proved that the functions of the right ear and eye were very imperfect. Even deep puncture with a needle excited no sensation on the right side, and was followed by no hæmorrhage, showing that the capillary circulation was greatly impaired. Pressure over the right ovary was acutely felt.

We may easily imagine that a commission with Charcot at their head, and experimenting on a patient who had been several months under his care in the Saltpetrière, took every precaution to ensure themselves against errors. Choosing this patient, they applied bracelets made of separate pieces of gold to her right arm and to the supra-orbital and temporal region. In 15 to 20 minutes the skin of these

parts grew red, and the patient declared that she felt a sensation of prickling and warmth. Even superficial puncture produced pain, and drew blood. Hearing, too, improved, and the right eye could distinguish colours plainly.

Similar experiments were tried with other patients, but we shall only report the important results obtained in cases where the experiment was repeated often, and all cautela observed. On all occasions the patients' eyes were blindfolded, and they were not allowed to know what was being done to them. It was immediately perceived that, in addition to the return of sensibility to the parts which were for a certain time covered by the pieces of metal, a "*dysæsthesia*" was effected in the surrounding parts. Thus, for instance, a patient, on whose arm a cloth dipped in boiling water was laid, complained of a sharp sensation of cold, and *vice versa*. In cases where gold produced an effect in recalling the sensibility, etc., they found that zinc, copper, or iron was followed by no reaction, whereas in another case, one of these last-named metals might be active and none of the others. Further experiments showed that, on application of one of the metals, gold for instance, not alone did anæsthesia of the skin disappear, but that a loss of muscular power on the anæsthetic side, which had been dynamometrically proven before the experiment, was likewise regained, and that, too, in direct proportion to what was lost by the other side, which had previously been the stronger and quite healthy. The same was the case when the temperature of the hand, which had recovered sensation, was taken. The temperature was, before the experiment, 4.5° F. lower, and afterwards, 3° F. higher, than that of the unaffected hand. However, two or three hours after the experiment, the former conditions returned, the patients were weak, exhausted, and sleepy, and complained of headache. Dr. Gellè was the first to call attention to the peculiar phenomenon that the patient lost as much sensation and force on the unaffected side as he gained on the diseased; and he convinced the Commission of the accuracy of his observations by auditory tests. Landolt proved the same as regarded the ocular power of distinguishing between colours; and finally the Commission found a similar process taking place in the sensibility of the skin. It was a case of *actual transference* (*transfert*).

But the most interesting discovery made was that not only patients suffering from hysteria (a disease at present regarded as functional), but also those afflicted with hemianæsthesia due to an organic lesion, experienced improvement from this treatment with metals.

A married woman, aged 54, was afflicted for many years with hemianæsthesia and hemichorea of the right side, and also with hemiplegia, consequent upon cerebral disease. Gold, copper, and zinc were tried in this case without success; iron alone brought back sensation, after 20 minutes, to the points of application, and in the course of a few days to the whole right side of the body. There was also a simultaneous reduction of the choreatic movements. Further

applications of small iron plates to the right half of the tongue, and right side of the nose, restored the functions of taste and smell in these parts. Similar success was achieved in another case of cerebral disease. It is, moreover, a striking fact that these favourable results, unlike those obtained in the cases of hysteria, were of a *lasting* character.

Charcot and several members of the Société de Biologie were inclined, from the commencement, to explain the facts by the supposition of weak currents produced by contact of the metals with the skin. It now became the duty of the Commission to test the truth of this theory, which they accordingly took in hand with the help of Dr. Régnard, Professor Bert's assistant. It was then found that application of gold, coined or uncoined, did actually produce currents which deflected the needle of a very delicate galvanometer between three and twelve degrees. Taking now a patient, who reacted towards gold, and on whose side (affected) two gold pieces produced a current of 2° deflection, and applying a galvanic current of the same strength, but produced in the ordinary way, it was found that the same results followed as were described in the case of gold, *i.e.*, the skin grew red and warm, and blood flowed on puncture, &c. Copper produced no effect upon this patient. Having observed that plates of copper gave a deflection of 15° , they tried a galvanic current of this strength, but there was no reaction.

Thus, when we are acquainted with the "metallic idiosyncrasy" (if I may be allowed the expression) we can obtain the same results, *viz.*, return of sensation, and increase of temperature and muscular power, by means of a current of equivalent strength. The interest of this fact was heightened by a new discovery. When a patient reacted to a current of 35° - 40° (deflection), and the strength of the current was then raised to 50° or 70° , the effect was lost, but returned if the strength was raised to 90° . Régnard,* who discovered these facts, formulates them as follows:—"In the galvanometric scale there are certain points, constant in each individual case, at which sensation is recalled by the action of the current, whereas this does not occur when the current is either weaker or stronger, however long it be applied." These "points" Régnard designates as "*neutral points*."

To conclude our report of the points proven in this question, we wish to repeat the words of the speaker on the subject of the "*transfert de la sensibilité*"—as yet the most interesting and obscure phenomenon met with.

When the presence of hemianæsthesia was clearly demonstrated, by methods which one might call barbaric, only that they were applied to parts altogether devoid of sensation, and when further this anæsthesia had yielded to the influence of metals or an electric current, the Commission found (and verified the fact by a frequent repetition),

* Régnard applied currents of the same strength as the physiological nerve-currents.

that the restitution of sensation on the diseased side was effected at the cost of the unaffected side. Thus, if the forearm or leg on the anæsthetic side regained its sensibility, the corresponding parts of the opposite unaffected limb lost theirs. When a more general character was given to the experiment, and a current passed from head to foot on the anæsthetic side, it was seen that the sensibility diminished on the unaffected side in the same degree and same direction as it reappeared on the other side. The organs of special sense on the sound side suffered a similar diminution of function, corresponding to what was regained by the organs of the affected side. Finally, we may mention that it may happen that the restored sensibility and muscular power may be again lost, if the metals are applied too long (*anesthésie et amyasthénie de retour*). In the above lines we have given an extract of the exhaustive report prepared by the Commission. In a letter lately addressed to me, Charcot gives his personal experience of the matter in the following words:—

“The influence of metallic applications on the phenomena of anæsthesia in hysterical cases is quite beyond all doubt. But we have before us a matter of ‘*metalloscopia*’ exclusively, having nothing whatsoever to do with ‘*metallotherapia*.’ For the existence of any therapeutic action is as yet quite problematical. I must, however, state that Burq’s experiments were carried out in four cases of inveterate hysteria, and three of these improved greatly, apparently under the influence of the treatment, which seemed to affect every symptom of the disease, whilst the fourth may be regarded as actually cured, and has acted as nurse in the wards for the last four months. Still I think we ought to wait some time before expressing our opinions of the therapeutical part of Burq’s theory. As to the question whether the application of metals produces effects on anæsthetic parts in cases of hysteria alone, I may merely mention that, to my great astonishment, all qualities of sensibility were quickly restored in a case of complete hemianæsthesia resulting from an organic lesion (the case which I have described in my lectures on posthemiplegic hemichorea). Since then I have observed a similar case treated with the same result. In these two cases of cerebral anæsthesia resulting, I repeat, from an organic lesion, the results obtained were definite and lasting, as it is now a year since the experiment was made. On the other hand, in a number of cases of hysteria submitted to this treatment, anæsthesia returned to its previous extent in 30 minutes, two, or at the most, in twenty-four hours. This *transitory character* of the phenomena appears to me to be a mark of *hysterical anæsthesia*, distinguishing it from the form resulting from *cerebral organic lesions*.

“I have tried the application of metals in various forms coming under the head of ‘*spinal anæsthesia* due to organic disease’ (myelitis, ataxia, &c.), without obtaining the very slightest result.

“The above few words is all I can say of *metallotherapia*, or rather *metalloscopia*. I have latterly varied the form of the experiment,

and am convinced that this will be a most interesting object of study. Perhaps the materials for the formation of a theory may be found in these researches, but certainly at present we are met by very unexpected facts of a remarkable and strange character, the objective reality of which cannot be doubted. Burq, of course, in his enthusiasm for the facts of which he is discoverer, goes a little further than quiet observation allows ; still I am convinced that he has conferred a real benefit on science by his delicate and ingenious researches which open a new and fruitful field of research."

M. Charcot further observes—"It seems that Wichmann ('Zur Diagnostik,' Hannover, 1800, Bd. i., p. 159), must be regarded as Burq's predecessor in metallosopia, from his 'Ideen Zur Diagnostik.'"

"Feeding v. Fasting."

Dr. Campbell, of the Carlisle Asylum, in the "British Medical Journal" of February 23, makes some very sensible and important remarks in regard to persistent refusal of food in hysterical girls and others. After reviewing the cases of the "Market Harborough Case" and "the Welsh Fasting Girl," he thus comments on them and their treatment, as it was, and as it ought to have been:—

To my mind these two cases were much alike, and were both cases of Hysterical Insanity. No one can be considered sane who, without cause, starves so as to endanger health and life. Should cases of "Fasting Girls" continue to crop up, I think it would be well if the subject were brought under the notice of the Commissioners in Lunacy, as, at their instance, enquiries are at times made into cases where sanity is dubious.

It is quite admitted that the standard of Sanity and Insanity varies much in different parts of the United Kingdom ; but when, as the result of some mental change, a patient acts in such a way as to endanger his own life, or even to become a local nuisance, it would be well at least to make a careful examination into his sanity.

Old ladies who keep a houseful of cats in town, thinking they have souls, find it now-a-days scarcely safe to carry out their opinions ; and the race of hermits who lived in dirt and discomfort has become almost extinct by the active discharge of duty of the Country Relieving Officers.

In the case of the "Welsh Girl," eight days of careful watching and the death of the girl clearly prove that even "Fasting Girls" cannot live on air. I think there can be little doubt among medical men or others that human life can only exist for a short period (limited to days) without nourishment, and that if ordinary food be taken into the system evacuations must follow, though of course they

may be lessened by the nature and quantity of the food, and the alvine evacuations may be at very considerable intervals. Though it may be interesting to know how long cases may exist with very little food, yet this treatment does not conduce to recovery.

In the present state of our knowledge of the vagaries, the simulations of diseases, and the moral depravity noticed in patients suffering under the hysteric state, I think that no more "Fasting Girls" should occur. I do not see why many cases of mental disorders should not be treated at home, and by any medical practitioners who choose to treat them; but I certainly think that the necessary *Physical* as well as *Moral* force should be used, and the treatment which has proved efficacious in asylums should be applied to similar cases when treated outside.

In the Journal for February 9th, I notice that another "Fasting Girl" is reported from Wales. Surely efforts will be made to prevent her from starving herself to death! If the patient be not rich enough to afford proper home treatment (which to my mind would consist principally of at least two good meals a day, and the attendance of a sensible, intelligent, strong-minded woman, who would do all in her power to help the girl to get rid of the idea of making herself notorious and ill), the proper mode to pursue in such a case would be to give notice to the Relieving Officer, who is bound to call in the Medical Officer of the Union. The mental state of the patient would be enquired into, and the case sent to the County Asylum.

Persistent Refusal of Food.—In this Asylum it is and has been the practice that, in all cases of refusal of food for two full days, it should be administered artificially; of course in feeble cases one does not wait so long. I quote the following from Dr. Clouston, of Edinburgh, my predecessor in office, under whom I acted as assistant for several years (Forcible Feeding, "*Lancet*," Nov. 30th, 1872):—"Hundreds of patients are fed with the stomach pump in our asylums every year, and no bad result follows to them, but quite the contrary. In a prolonged case I have scarcely known any one who did not take to the stomach pump; I have myself so fed thirty patients in the last ten years, all of whose lives were probably saved by this means, ten of whom recovered, and a large number of whom gained weight during its use, one to the extent of a stone. I am sure that a thousand patients are allowed to die by the gradual process of starvation because they are not fed in time with good full meals regularly given by the stomach pump, for one who is injured by using it." Dr. Clouston mentions that Dr. Maclaren, of Carlisle, suggested to him the use of a stomach tube made of Indiarubber like the French flexible catheters, which he considered would completely obviate any risk of injury, even in clumsy hands. Shortly after that date I got tubes made of this material, and have used them since and found them most satisfactory.

During the last five years thirty-five cases have been fed in this Asylum, one of them for a continuous period of two years and one month. I may mention that this patient was phthisical, and ultimately died of phthisis. She took her food herself for five months prior to her death. Among these cases, four were hysterical cases in girls; three of them recovered, and the fourth was removed to another asylum, and three were youths in a somewhat similar state, produced by sexual causes (the latter were all discharged recovered), the principal features of their cases being silly, emotional excitement, alternating with a trance-like or cataleptic-like state, in which the patient would lie for hours taking no notice of what went on around, and apparently unconscious of pain or discomfort, and refusal of food for considerable periods.

Considerable numbers of girls in the hysteric state who had refused food at home, when brought here, and when the means and manner of giving it were explained to them, have at once given in and taken their food. I always make a point of taking such patients to see another fed with the pump, if one is being fed in the house at the time.

I believe that in certain cases persistent refusal of food may be caused by disease or by the sequelæ of former diseases. I reported in the "Journal of Mental Science," January, 1875, two cases of melancholia presenting similar mental manifestations to each other, evidently the result of visceral lesion. Great depression, suicidal longings, abdominal discomfort and refusal of food were the chief symptoms. Both died above sixty years of age; in one a stricture of the large intestine was found, in the other occlusion of the bile duct.

In conclusion, I admit that there are three apertures by which food can be introduced into the alimentary canal (I refer to the nose, mouth, and anus) independently of the will of the patient, and a variety of instruments are available. Under any but extraordinary circumstances, I certainly prefer the use of the natural entrance, with the stomach pump and soft tube as appliances. I, however, admit that rare cases may arise where the other methods may present advantages, almost solely where cut throat or disease of œsophagus exist. Dr. Brown-Séquard, in the "Lancet" of January 26th, 1878, records cases where nutritive enemata were employed for periods of three, six, and eight days. Two were cases of Hysterical Spasms of œsophagus, and recovered.

Dr. Fraser on the Disadvantages of Boarding out certain Harmless Lunatics, and on the advantages of "Open Doors" in Asylums.

The following are extracts from the last Report of the Fife and Kinross Asylum by Dr. Fraser, who has since been appointed Deputy Commissioner in Lunacy for Scotland:—

My efforts to board out others and thus prevent the over-crowding of the Asylum, have been fruitless. Recent occurrences among the boarded-out patients in the county have contributed to this result.

The boarding-out of pauper lunatics with the cottars of certain villages in the county has been esteemed a safe and proper channel, into which the accumulation of chronic and incurable cases could be diverted, but events have recently occurred which it is feared will not only render this system of providing for the chronic insane unavailable, but also tend to increase asylum population. The events to which I refer are the births of two children among the boarded out females, and the petitioning of the General Board of Lunacy by the inhabitants of Kennoway and district against the boarding out of lunatics and imbeciles in their midst. I beg to lay before you the terms of this petition, as it is as well you should know the objections to this method of providing for a certain class of the insane. The arguments in the petition are these—

“1. Their presence discourages capitalists from speculating in house building.

“2. From the want of cottage accommodation summer visitors have no opportunity of residing in the village of Kennoway, and the inhabitants therefore lose the benefit and influence of good society.

“3. Their presence is highly detrimental to the morality of the young, numerous instances of exposure of the person and other unseemly disgusting acts in connection therewith being well enough known.

“4. It is a very general impression that the imbeciles themselves are not sufficiently supplied with proper nourishment.

“5. The system of boarding out is founded upon a mistaken philanthropy, because the parties boarding them have no more regard for these imbeciles than to look upon them as paying objects.

“6. The value of house and land property is declining, and will continue to do so, the more especially if the village be degraded to the condition of a dwelling-place for insane men and women.

“The recent case of the unfortunate female lunatic has drawn marked notice, and the existence of the most revolting practices cannot be otherwise than deeply injurious to the morals of the community, and must tell with grave effect on the general welfare of the village population.

“We are satisfied that the prosperity of the parish is affected by the presence of these unfortunate creatures, and we venture to express the earnest hope that all will be done that is possible in the circumstances for giving early effect to the wishes of the inhabitants. The accompanying petition may be taken as the all but unanimous expression of the people out of a village of 150 houses. Each signature, we may say, represents a house or family.

“In conclusion, we would respectfully but firmly urge the propriety

and reasonable necessity for each parish providing within its own boundary accommodation for its own helpless creatures, and not to oppress with their imbecile men and women neighbouring communities."

The picture here presented of the state of the boarded-out cases in Kennoway is not a happy one. Many of the above statements are, however, not in accordance with the description given of their care by Dr. Arthur Mitchell in the Twelfth Report of the General Board of Lunacy. It is evident that many of the cases have not been suitable for this system. The two female lunatics who have borne the children referred to are now in the asylum, and I beg to inform you that their unfortunate condition was not due to any eroticism on their part, but to a want of care on the part of their guardians, and to the loose morality existing in a portion of the general population.

Open Doors.—The system of unlocked doors remains in operation. Much has been said and written against it within the last year. It has been proved, "on paper," that open doors are impossible; and that, if they exist, unusual and irksome alternatives are adopted for the safe custody of the inmates. Nevertheless, the open door system is a living fact, free to the inspection of all, especially to those who doubt its existence and condemn it unseen. Let me briefly summarise what has been already stated explanatory of the system:—A visitor can enter at the front door, and go through wards, containing 180 patients, without his progress being arrested by a locked door; he could also let himself out by four different doors on to the south terrace by turning an ordinary brass handle. One of the Commissioners of Lunacy entered the Asylum by one of these doors, and was half-way through the longest corridor before I accidentally met him. I then conducted him through the wards containing these 180 patients without any key in my possession.

I look upon the open doors as merely a further diminution of seclusion and restraint; in fact, a substitution of moral government for that of locks and keys. My experience is, that little excitement and greater contentment prevail where there is the most freedom.

Spitzka on Reform in the Scientific Study of Psychiatry.

Under the above title, Dr. Spitzka, of New York, who recently gained the W. and S. Tuke Prize Essay, publishes an address to the New York Neurological Society, in the April Number of the "Journal of Nervous and Mental Disease," in which he criticises most severely—many people would say intemperately—the work of American asylum physicians and the policy of the American Association of Superin-

tendents of Asylums. There is much truth, however, in what Dr. Spitzka says, and we think our American brethren would do well to take heed to this and many other indications that a more liberal and open mode of conducting their asylums and managing their Association is required. All who know the history of the American Association know the work it has done, and there are few members of the medical profession interested in the matter who are not acquainted with the spirit of philanthropy and self-sacrifice that has generally characterized the physicians to the hospitals and asylums for the insane in the United States. Much good and honest work has been done, and is being done, too, in the scientific study of mental disease in American asylums. It is, therefore, a pity that they should allow their good to be evil spoken of by those who are not fully acquainted with what they and their institutions have done, through any mere mistake in their general policy as an Association. For example, we have never sympathized with the exclusive and unscientific spirit which shuts out Assistant Medical Officers of Asylums from the privilege of membership; we hold it to be a mistake in policy, a misfortune in practice, and unjustifiable on any ground. Dr. Spitzka's article is also a plea for the appointment of visiting physicians to American asylums who shall enjoy the position and means of studying disease which the Visiting Physicians of Hospitals enjoy. The ability of the article is unquestionable, and its vigour almost excessive, but its personalities and spirit are certainly not becoming in one member of a profession towards other members of the same profession, the aims of many of whom are no doubt as high and their conduct as honest as his own. It is certainly a pity that the mode of American political vituperation and its intemperance of language should be allowed entrance into the literature of the mild and merciful profession of medicine. If Dr. Spitzka's arguments and cause are good, surely, on every principle of true literary art and good taste, his language should be moderate and free from passion. We could point out to him some asylums in his fatherland with very distinguished Visiting Physicians, where all the instruments of neurological research and therapy might be found, yet whose management and the comfort of their patients cannot be compared with most American asylums. To these remarks we shall add a few extracts:—

From a pathological and clinical point of view, therefore, as well as for several important practical reasons, the study of insanity should be considered a subdivision of neurology. A strictly separate study of either must be prejudicial to both, on account of their numerous and intimate relations. To make a special province of diseases of the liver, without considering these in their relation to cardiac and pulmonary insufficiency, gastric, hemorrhoidal, and enteric associated conditions, would be scarcely less absurd than to treat of pulmonary and cardiac, gastric, enteric and hemorrhoidal affections, and neglecting their hepatic complications! Yet the former case is represented by him who lectures on insanity without being familiar, or caring to familiarise himself, with nervous diseases in general; the latter by the neurologist, who is prevented by an unjust monopoly from considering mental disorder in conjunction with other nervous disorders.

As you are well aware, it is only under exceptional circumstances, if ever at all, in America, that the teacher of nervous diseases can command the material essential to a thorough clinical and pathological demonstration of insanity.

This is chiefly on account of a feeling among a number of asylum superintendents, that they can claim to monopolize the science of psychiatry, to exclude every non-asylum physician from this field, and that they alone are entitled to teach this subject in our medical schools. *A priori* there can be no fairer proposition than this: that he who has devoted his lifetime to a given specialty, ought to have the first voice and the high privilege of instruction in that specialty. If capable, zealous, and honest scientists establish a monopoly in scientific matters, even a monopoly may become endurable. But I would most strenuously object, that every one who may have happened to possess the requisite social and political influence to receive an asylum position, is therefore to be considered a psychiatrist. Such a conclusion, based on an acceptance of a discreditable *statu quo*, has been the great bane of American psychiatry, and I regret to say has been diligently fostered by that narrow circle of asylum physicians which furnishes the *ex cathedra* statements of the Asylum Association. To these statements, too, much *blind obedience* has been paid in the past, too little *attention of the proper kind* is paid to them at present. . . .

If we cast a glance at the present state of psychiatric literature, we find that, while in Great Britain and on the Continent valuable monographs are daily being published, America is far behind, not only in the number but in the quality of its contributions to psychiatry, in striking contrast with its well-deserved eminence in other specialties. American psychiatric contributions are frequently abstracted from articles appearing in transatlantic journals, or, if *quasi* original, are still more worthless. . . .

I can assure you, that utterly beneath all criticism as these specimens of asylum literature are, they are by no means the very worst.

The average articles seldom rise to such a lofty level as pathological, clinical, and therapeutical subjects constitute in their modest and unpretentious horizon. Occasional melancholy lucubrations over deceased and lamented brother superintendents, or reminiscences of the newspapers published by asylum patients, contributions to what is termed "mental hygiene," strongly suggestive of the influence which the asylum chaplain has acquired over the asylum superintendent, and impassionate glorifications of "mechanical restraint" constitute the range of subjects which medical superintendents delight to read and write about.

If we look at their annual reports, we find that some of them wax enthusiastic over the prizes gained by their hogs and strawberries at agricultural fairs, while others give you the benefit of their historical ideas on insanity. Beginning with David and Solomon, they pass from Scripture to Homer, thence to Bedlam, and tracing the development of humanitarian sentiments to the present day, when unlucky legislators were induced, through the expansive views of the superintendents regarding the insane millennium, to appropriate ruinously extravagant sums to the erection of an insane paradise, they kindly permit their trustees to publish such "historical" documents accompanied by caricatures of morbid brain tissue in the illustrated monthly magazines.

Judging by the average asylum reports, we are inclined to believe that certain superintendents are experts in gardening and farming (although the farm account frequently comes out on the wrong side of the ledger), tin roofing (although the roof and cupola are usually leaky), drain-pipe laying (although the grounds are often moist and unhealthy), engineering (though the wards are either too hot or too cold), history (though their facts are incorrect, and their inferences beyond all measure so); in short, experts at everything except the diagnosis, pathology, and treatment of insanity. . . .

To this, as to all antecedent papers of a similar character, no other answer than the chorus already echoed *ad nauseum* from asylum to asylum—that its writer has never been an asylum superintendent, and can consequently know nothing about insanity, is expected. Since this is the sole argument which I have ever heard the defenders of the impeached system employ, let me ask, what is in this mysterious "asylum experience" that prevents those not possessing a superintendency from judging of asylum matters? What is the difference between a hard-working, able, and trustworthy assistant physician of an asylum and his superintendent, selected to fill his position on grounds of nepotism and political favour? It is a well-known fact that *this* "asylum experience" argument is not used abroad. The *British Medico-Psychological Association* counts among its members not only superintendents, but also their assistants and physicians in general practice; the *Medicinisch-Psychologische Gesellschaft*, of Berlin, and *Verein fuer Psychiatrie*, of Vienna, are similarly constituted; but it

remained for the American Association of Medical Superintendents to announce that, on principles analogous to those which govern "trade unions," only medical superintendents could be members. No doubt the younger members of the profession, who occupy the position of assistants, were excluded in order to prevent the rebellious tendencies of energetic and original workers from running loose and opposing the benevolent tendencies of certain superintendents of keeping asylum matters in the same old conservative rut.

PART II.—REVIEWS.

Cyclopædia of the Practice of Medicine. Edited by Dr. H. VON ZIEMSEN, Vol. xiv.—*Diseases of the Nervous System and Disturbances of Speech.* By Profs. A. EULENBURG, NOTHNAGEL, H. VON ZIEMSEN, JOLLY, KUSSMAUL, and Dr. J. BAUER.

This volume along with the 12th of this *Cyclopædia* on Diseases of the Brain and its Membranes bid fair to become for the next ten years standard works on Neurology. We prefer to notice the last volume first. The expectations raised by the array of names at the beginning are not disappointed on a perusal of the volume. To say that all the articles are of equal value and interest would be absurd, or that a book written by so many authors has the unity of one that has come forth from a single brain. It may be safely affirmed that in the future no exhaustive work can ever again be written either on general medicine or even on all the diseases of any one great system by one man. The literature is now too extensive, the requisite experience too impossible to obtain for this ever to happen. The industry and prolixity of Germans have been the chief cause of this. Such a book as the volume we are about to notice, was, in its exhaustive references to the literature of all nations, only possible in Germany. There can be no doubt that English medicine is under a deep debt of gratitude to Prof. Ziemssen for his *Encyclopædia*, and English-speaking Neurologists in no less degree for his twelfth and fourteenth volumes. The possession and perusal of such books is especially necessary for the alienistic subdivision of the Neurologists. In their case it is ever necessary to be stimulated to search for the hereditary, the dynamical, and the pathological source of mental abnormalities, to remain un-

satisfied till they have discovered the *locus in quo*, and to be reminded of the close kinship of all the neuroses. We can imagine no better practice than for an asylum physician, systematically at regular intervals, to read through a good book on general nervous disease.

The first article is by Prof. Eulenburg, whose researches as a physiologist and practical physician are already so well known, and whose investigations, along with Dr. Guttmann, into the functions and diseases of the sympathetic system of nerves, are to become still better known to the readers of this Journal. (See "Original Articles," p. 165). The subject is "Hemicrania," which he points out is most common (five to one) in the female sex, usually making its appearance after puberty, and disappearing after the age of 50. It is allied hereditarily to epilepsy and insanity, and like them is one of Griesinger's "Congenital Neuropathies." There is one kind of insanity to which he might have pointed as being especially allied to Hemicrania, and that is *Folie Circulaire*. Hemicrania actually occurs as one of the periodic recurring symptoms in some cases of this disease. We have a female patient now in whom the period of excitement is always ushered in by hemicrania and vomiting, lasting for about two days. The following is a curious and suggestive fact:—

We find in many attacks of migraine, especially those which are connected with vaso-motor disturbances, that deep pressure gives decided pain when applied to the *region corresponding to the ganglion cervicale supremum of the cervical sympathetic*, or to the *ganglion cervicale medium*; sometimes also when applied to the *spinous processes of the lowest cervical and the first dorsal vertebræ*.

Besides these cutaneous hyperalgesiæ, there may exist a *pathological acuteness of the sense of touch (hyperpselaphesia)* in the affected side, as O. Berger has lately shown by accurate tests of the sensibility in a case accompanied by fluxionary hyperæmia (hemicrania angio-paralytica).

The following is his explanation of one group of symptoms:—

The group of symptoms called *hemicrania sympathico-tonica* is to be explained by supposing (as is implied in the name, given by du Bois-Reymond) a *unilateral tonic spasm of the vessels of the head, caused by tetanus in the cervical region of the sympathetic, or in the spinal centre of the cervical sympathetic*.

For the treatment of the disease the author believes more in the constant galvanic current than anything else.

In the next article on Angina Pectoris, he says:—

It follows that we have these types, namely :—

1. *Excito-motor cardiac or cardio-centric ganglionic angina pectoris*, from direct lesion of the automatic excito-motor ganglia of the heart; it may assume the form of irritation (with increased rapidity of pulse) or of paralysis (with retardation of pulse.)

2. *Regulator angina pectoris*, from lesion of the cardiac system of nerves of arrest (vagus). a. *Direct neurosis of the vagus*, either in the form of irritation (retarded pulse and increase in force of pulsations of heart, full, hard pulse, with disturbance of phonation and deglutition; sometimes a temporary arrest of the heart), or, more rarely, in the form of paralysis (acceleration of pulse). b. *Reflex neurosis of the vagus* (angina pectoria reflectoria), originating in disease of the abdominal organs, with the symptoms of irritation of the vagus.

3. *Excito-motor sympathetic angina pectoris*, from lesion of the accelerator nerves of the heart which run with the sympathetic. (Symptoms as in the first form).

4. *Vaso-motor angina pectoris*, from affection of the vaso-motor nerves, running in the sympathetic for the most part—either in the form of irritation (contraction of the vessels, increased pressure, with normal or but slightly increased frequency of pulse; symptoms of arterial anæmia, paleness and coldness of the skin, etc.); or, more rarely, in the form of paralysis, with the opposite set of symptoms.

The two following articles are on Unilateral Progressive Atrophy of the Face, and on Basedow's Disease. The next, on Progressive Muscular Atrophy, is the best account of that disease we know. The author leans to the Neuropathic rather than the Myopathic theory of origin of the disease, but accepts unreservedly Friedrich's pathological investigations into the origin and cause of the disease in the muscles affected. "The disease consists in an essentially inflammatory process, a *polymyositis chronica progressiva*." As regards the changes found in the cord he lays special stress, as most recent authors have done, on the changes in the multipolar ganglion cells of the anterior cornua.

Nothnagel contributes what is in reality a treatise of 128 pages on Epilepsy and Eclampsia. He says, in regard to the former—"The last twenty years alone have advanced us at one time more than the previous twenty centuries taken together." He differs from Russell Reynolds *in toto* as to what constitutes "Epilepsy." We suspect that the Reynolds of 1878 would differ in this respect from the Reynolds of 1861. Nothnagel confines the term Eclampsia to "those cases of

epileptiform spasms which, independently of positive organic diseases, present themselves as an independent acute malady, and in which—so far as our present knowledge allows us to judge—the same processes arise generally in the way of reflex excitement, and the same mechanism in the establishment of the paroxysms comes into play as in the epileptic seizure itself.” Even thus curtailed from its ancient wider signification, he is a little doubtful about retaining it as a separate disease from “Epilepsy.” No doubt in a short time we shall have a new nomenclature according to the pathological cause of the epilepsies, and “Eclampsia” will drop out of use as indicating any specific disease or group of diseases. Frank was more scientific than his successors when he called the latter “acute epilepsy.” Nothnagel confesses “that it is not possible at the present time to give a brief definition of epilepsy.” In this respect it is in precisely the same case as insanity. The author attributes the highest importance to experimentations on animals, in having advanced our knowledge of this disease. After giving a clear sketch of the results of those experiments, and of Kussmaul’s deduction that anæmia of the brain is always present in convulsions, “Then I have shown that the convulsion centre, *i.e.*, that circumscribed spot from which the whole body of the voluntary muscles may be thrown into tonic and chronic spasms through reflex excitation is to be sought for in the pons.” His opinion is that “as compared with inherited tendency, all the other influences that affect the organism of the nervous system as a whole are inferior in their capacity for exciting the central epileptic change.” Drunkenness he places as the next most potent cause of epilepsy. He puts aside, or regards as doubtful, sexual excess, masturbation, continence, over mental exertion, scrofula, rickets, and insufficient nourishment, as causes of the disease. He does not adhere to Brown-Séquard’s conclusions as to the frequent connection of epilepsy with diseases of the spinal cord. After referring to the pathological results of Van der Kolk and Echeverria in regard to changes in the medulla oblongata, of Meynert in regard to changes in “disparity between the sections of the two hippocampi majores,” and of Meyer, in regard to a diseased condition of the vessels, he concludes thus—“No alteration is shown to be constant.” He divides epilepsies into four kinds, all symptomatological. He gives a short and not a very satisfactory account of the mental symptoms usually connected with epilepsy, and then quotes Reynolds

and others as to the opinion that "no relations of any kind whatever exist between the mental disturbances and the seizures." No one can have seen much of epilepsy who believes this dictum. We are convinced that such a fallacy could only have been propagated through want of a proper psychological analysis of the mental condition of epileptics. The psychosis takes the most various and subtle forms. There may be only slight alterations in tastes, emotional states, power of inhibition, power of concentration of thought or of mental application, moral sentiments, or self-respect, not very observable except they are closely enquired into. One thing we have observed, which we have never seen mentioned by any author, and that is, that where there is a tendency and habit of the brain to sound sleep and long rests after each fit, there is apt to be less mental impairment and fewer maniacal attacks.

In regard to the pathological seat of the disease, Nothnagel is totally opposed to the idea that it is in the convolutions. "We firmly maintain that the real seat of the disease is in the pons and medulla oblongata." No doubt the immediate co-ordinating centre that throws the muscles into contractions is there situated, but is that the "real seat" of the disease? As well may we say that the real seat of the disease is in the muscles, or that the real source of the motor power of a steamer is in the mechanism of the engine and not in the boilers. It seems to us that if anything is proved by the studies of Hughlings Jackson, the experiments of Hitzig and Ferrier, and the whole results of the modern study of brain function, it is that the "seat" of all co-ordinated convulsion must be looked for in the convolutions. Did the author ever see a pigeon, frog, or any other animal go into true epileptic convulsions whose convolutions have been maimed or destroyed? No physiologist ever saw such a thing. Is not this one fact in itself sufficient to prove our proposition? He mentions nothing new in regard to the treatment of the disease. The article is painstaking, but not striking or original.

Eulenburg's article on Catalepsy is very good. We agree with him in this:—"The consciousness is frequently entirely lost from the commencement of the attack." "Most authors are inclined to the opinion that the cataleptic rigidity is only an increase of the normal tonus of the voluntary muscles." Von Ziemssen, in his article on Chorea, says that psychical disturbances are rarely absent in that disease.

They consist of irritability and changeability of temper, change of character and morals, and mental enfeeblement. He thinks those are due to "slight anatomical changes in the central apparatus of the nervous system;" he thinks that the connection between chorea and rheumatism is less close in Germany than he admits has been proved in England and France. He greatly recommends arsenic in the treatment of the disease. Jolly, in the next article on Hysteria, is more satisfactory in regard to the disorders of sensibility that occur in the disease than in regard to almost any other of the symptoms. He says:—"In almost no hysterical person is there absent the symptom of exalted sensibility to pain in some portion of the skin or more deeply seated parts, with or without spontaneous pains in the same." He goes over the various anæsthesias and hyperæsthesias of the various parts of the body, but beyond this *catalogue raisonné* we do not get a very clear idea of the most frequent or of the most important symptoms. He gives a description of the usual mental disturbances in hysteria, dwelling specially on the tendency to "uncontrollable impulses," the existence of which, he thinks, affords a clue to the understanding of many of the morbid psychoses present. We think that Laycock's mode of looking at Hysteria as being in all its myriad symptoms essentially a disturbance in the higher reflex functions of various parts of the brain, excited by the afferent nerves of the generative apparatus, is by far the most scientific generalization on the subject yet offered, and the most instructive way of looking at the phenomena. In the pathological part he mentions that there are "some cases of multiple sclerosis of the brain and spine which can only with certainty be diagnosed from hysteria in their later stages and by the final issue." We think this is not a scientific mode of looking at the matter. The most characteristic case of hysterical fits, and of hysterical lying and cheating, and hysterical psychosis which we have ever seen ended in "hysterical" paraplegia, with trophic disorder, leading to enormous bed-sores, and after death the medulla was found full of "miliary sclerosis." Now, would Professor Jolly say that this was not hysteria at all, although there was every symptom of the disease for many years during life? As regards treatment, he says:—"Our experience of the most varied remedies is that they owe their efficiency really to the psychical impressions which they create." He recommends electrical treatment for the hysterical paralyses.

Kussmaul's article on Disturbances of Speech, which he calls an "attempt in the pathology of speech," is in all respects the most elaborate, the most original, and the most difficult of condensation or synopsis in the book. It extends to 300 pages, and is, in fact, the most complete treatise on the subject in the English language. We have to defer, from want of space, till next number, our notice of it.

Insanity in Ancient and Modern Life, with Chapters on its Prevention. By DANIEL HACK TUKE, M.D., F.R.C.P.

This is a most interesting, and promises to be a useful book. It is written with even more than the author's usual grace and clearness. While in no respect trivial or surface-skimming, it is yet popular in the best sense, and professional as well. The author dives into the quarries of the classics and old historians for his facts as to the probable prevalence of mental disease among the ancients, and we need say nothing as to the interest of those parts of the work, for our readers have already seen much of this part of the work in the pages of this Journal. We cannot help saying, however, that the reader of such a condensed historical account of an obscure subject, that has had to be hunted up from original sources and casual references in the byeways of an old literature, seldom realizes his full obligations to the author. In regard to the question of the possible increase of insanity in our own time, Dr. Hack Tuke sets forth shortly the facts and figures, points out the modifying circumstances, and leaves the matter still a *questio vexata*. This, we think, is a pity. Our own belief is that, when properly interpreted, the facts do not show any increase of insanity at all. We think that the sluggish life, poor habitations, constant inbreeding, and bad food of the agricultural labourers in the old times, produced far more idiocy than the active life, the worry, the whirl, the turmoil and over-luxuriousness of to-day produce acute insanity, which has less tendency to propagate itself too. It may be that we have more general paralysis, but that disease is, to our mind, the very finest illustration of Nature's power and tendency to destroy the seeds of future brain disease in the land. The man in whom it is developed has usually taken every means to exhaust his brain-power and injure his brain, and Nature brings things to a crisis at once, and makes

quick work of him, bringing him and all his potentialities to an end at once. If he has begotten children, it was in the time of his youth and strength, before transmissible weakness had been set up in his brain. We look on all constitutional disease as the tentative efforts of Nature to stop the propagation of bad protoplasm and keep up a good type of organism. We believe that in the evolution upwards of living things there has been a higher evolution of diseased processes, and a survival of the fittest of destroying agencies. A moment's consideration must show anyone that the pathological tendencies of the batrachian stage will not kill off sufficiently the weakly mammals, and that the anthropoid type must needs have far more subtle disease to attack its more delicate organism and more highly developed structure. This question of the evolution of new diseases, and the laws which correlate them with the structures they attack, is a new and untrodden field of pathological research. Take diseases of the brain with mental symptoms, of which hereditary insanity is the type. Such diseases are unknown in the lower mammalia, and in the lower savage races also all but unknown. As civilisation developed the number and quality of the brain convolutions and the complexity of their structure, the type of disease represented by idiocy, congenital imbecility, and congenital epilepsy seems to have been first developed. These don't kill the organism, but let it live and breed, and so propagate the disease in greater intensity. The convolutions of the brain went on increasing in size and fineness, so Nature had to develop a new pathological process to run side by side with the new physiological facts, to act in the same way as pruning to a tree or destroying the weaklings in a flock. She set up the progressive degenerations of the higher nerve-tissue, the most active and deadly of which is undoubtedly general paralysis. This fixes on the very highest part of the most highly-developed living structure that has yet been produced in nature, viz, the convolutions of the human brain in the most highly civilized man. It attacks the very outer rhind of those convolutions where the mind processes of the master minds of the age take place. It is Nature's latest pathological evolution, and is, in all respects, equal to its work. It is the one brain-disease that is as sure as the law of gravitation. After it once seizes one brain-cell of its victim, there is no escape for the life of the whole organism. The man must die as by a law of doom, and beget no more offspring, or transmit or acquire no more

disease. It is *par excellence* the disease of the highest civilisation, and, as a pathological process, is most worthy of study by the philosophically-minded neurologist.

Dr. Tuke thus graphically describes the influences that cause insanity in our modern life :—

The atmosphere which the Englishman and the Frenchman breathe is full of psychological germs calculated to infect his nervous system with disease, whether arising from the commercial, the political, or the religious world. Hopes and fears appealing to the deepest motives of our nature, political excitement producing tumults of passion and bitter feeling, commercial waves of good and bad fortune causing alternately intense joy and as intense disappointment and chagrin, all these acknowledged dangers confronting the healthy mental equilibrium surround the daily life of the denizen of the world of to-day.

He quotes many of the impressions of the year put down by the superintendents of asylums in their annual reports. Such are usually worthless as generalizations. The circumstances of the writing of an annual report are unfavourable to true scientific induction. The facts are few, the time to which they refer is short, the document is intended for a temporary purpose, and the knowledge of these things unconsciously affects the writer. We would describe the chapter on insanity in the higher classes as gossiping, and suggestive rather than scientific. Taking such cases as Leland and Collins, we do not think that the occurrence of insanity in them can be said to prove anything without reference to their hereditary history and their probable brain tendencies and congenital qualities. Any examples of over-work or over-worry, or over-devotion to one pursuit, producing insanity in men whose families had been free from the neuroses for several generations, whose boyhood had been healthy, and whose general brain health had been good up to the time the assigned cause came into operation, would be worth most of the cases quoted in the books. He very properly gives the credit due to it, looking at the matter from a purely physiological and mind-hygienic point of view, to rational religion, as the most controlling, steadying, refining, and soothing of all human motives.

The chapter on the Auto-Prophylaxis of Insanity tells all that science, physiology, medicine, and common sense can as yet say in regard to the matter, in a very vigorous and earnest way. The pity is that it is just those persons that most need our author's counsels, from their hereditary tendencies to

insanity, who, instead of avoiding its exciting causes, seem in many cases to search for and follow everything that tends towards the disease. Would that an abstract of Dr. Hack Tuke's views were prepared suitable for schools, so that such persons should be taught at the earliest possible time, and so that many persons should be helped to carry out the principle he so rightly lays stress on—" *principiis obsta.*" Dr. Tuke preaches a good and much needed sermon from the text taught by the school of Salerno, viz., to employ these three:—"A cheerful mind, rest, and a moderate diet." The axioms at the end read like Hippocratic sayings.

Gedanken über die Socialwissenschaft der Zukunft von Paul Lilienfeld. Dritter Theil: Die Sociale Psychophysik, Mitau, 1877.

This is the third part of Mr. Lilienfeld's "Thoughts on the Social Science of the Future," which, we suppose, is a modest way of hinting that coming generations are likely to accept his views upon social questions. We have not had the advantage of having read the two previous parts of the work, and should regret if this deficiency has prevented us from fully comprehending the author's meaning.

The part now under review is entitled Social Psychophysik, which the author tells us is the newest of all the sciences, having not yet entered its teens. He defines Psychophysik as psychology grounded upon the methods used in studying the natural sciences. The author's leading idea seems to be that he has discovered in physiology a key which will guide us through all questions in morals, religion, political economy, and æsthetics; and that all these subjects ought to be studied on the same basis, and the same physiological terminology used. But though we meet with a happy analogy here and there, and though no one can deny that physiology is a most useful science and has already thrown some light upon the nature of mental action, the physiological method of approaching its subject is quite different from that of psychology, the one being based upon the observation of sensible phenomena and the other upon the introspection of our own thoughts alone; when we try to apply the laws of physiology to mental action we have to face difficulties which the human mind cannot bridge over. To use a quotation in the book, realism

and idealism resemble two sets of workmen who are hollowing out a tunnel from two opposite sides. If the calculation be just and the execution true, they must meet in the middle of the mountain; but they have not yet met, and until they do so the tunnel is useless as a means of passage. To go from one side to the other they must still go round the mountain or clamber over it. Most people acquainted with physical science have noticed analogies to points in speculative philosophy. Take the case of political economy. This science, if we are to call it one, bears a resemblance to physiology. It deals with the nutrition of the body politic, with the increase of capital, the accumulation, exchange, growth, and decay of wealth; and these analogies may be seized upon for the purposes of style and illustration; but otherwise they are of no practical value. No new discovery in physiology is likely to affect the truth of Mr. Ricardo's theory of rent or Mr. Fullarton's views on the currency. We do not understand barter any better because we understand endosmosis; the circulation of the blood by no means makes us know anything more about the circulation of money; nor does a correct theory about accumulation of fat explain the consequences to be expected from an accumulation of capital.

Mr. Lilienfeld seems to think that we have some real addition to our knowledge when he calls money intercellular substance. He talks about cells and organisms, and introduces anatomical and physiological terms in discussing social questions in a way that strikes us as somewhat uncouth. Here is a short specimen: "The social organism possesses, on account of the higher grade of its development, no other cells than only nerve cells, and no other tissue than only nerve tissues. The social nerve cells are represented by individuals of both sexes in different grades of development. The social nervous tissues are represented by single social groups, ranks, and trades," &c.

In treating of speech, he tells us that it is a polarisation of the human intellect directed outwards, and, in the same page, that it is an intercellular substance, and as such is subject to all the laws which regulate the relation of the cell contents to the intercellular substance. He then gives us a learned and discursive essay on the origin of language, quoting largely from Max Müller, Schleicher, Whitney, and others, every now and then telling us on no account to forget that speech is intercellular substance.

But while we think this kind of style unfortunate, there is no question that Mr. Lilienfeld's book is a very learned work. The author has read deeply on all the numerous subjects which he discusses, and his remarks upon history, morals, religion, art, political economy, and other departments of speculative philosophy show a wide and ripe culture. His tone is calm and philosophical, almost too much so; we miss the polemical warmth of Buckle.

Before bidding Mr. Lilienfeld farewell, it may interest our readers to know how he treats the subject of insanity. By dint of quotations from Virchow on Cellular Pathology and Dr. Maudsley's Physiology and Pathology of Mind (our author deals largely in quotations), he instructs the reader how cells become diseased or degenerate, and how men become insane, and then he sets off to remark that communities as well as individuals may give way to mad impulses. This list of these collective insanities naturally include what he himself most dislikes, as Dante found and Michael Angelo painted their personal enemies in hell. In religion he places fanaticism, persecution, the inquisition, burning witches; as intellectual delusions he gives false philosophy, useless pedantry, and dogmatic subtleties; as moral ones abstinence and luxury, and so on. All this is much too vague to be instructive, and we think more might have been made out of the theory—none the less so that it will always be easy to prove to one party that its opponents are insane. A friend once asked me to give an instance where a whole generation seemed to have gone mad. I gave him the restoration of Charles II., and the reaction towards despotism, intolerance, and immorality which followed it; but as he was a Tory he did not like the example, insisted that at that time the English people returned to their senses instead of losing them, and took the French revolution as a clear case of national insanity.

PART III.—PSYCHOLOGICAL RETROSPECT.

Italian Psychological Literature.

BY J. R. GASQUET, M.B.

The numbers of the *Archivio* that have accumulated since the last Retrospect contain many articles of interest, the most prominent of which can alone be noticed.

A Committee of the "*Società Freniatria Italiana*" met in November, 1876, to consider some proposed alterations in the Italian penal code submitted to them by the Government; but the only point which led to any discussion of importance concerned the position of habitual drunkards before the law. Dr. Biffi and others maintained that they should be held less responsible for any crime they might commit when intoxicated than those who were only occasionally drunk; but it was urged, on the other hand, that the State was interested in offering no premiums to habitual intemperance.

The meeting of the Society itself, held last September at Aversa, was opened by the Prefect and the municipal authorities. In his introductory address, the President dwelt particularly on the recent death of two eminent Italian alienists, whose labours have often been mentioned in these summaries:—Professor Livi, who died from over-anxiety during a trial at Leghorn, in which he was engaged as assessor; and Father Salerio, for 35 years the physician and director of the monastic Asylum, San Servolo, at Venice.

At the subsequent sittings various papers of physiological and pathological interest were read, some of which will be hereafter noticed, and interesting discussions took place. It was determined to petition the Italian Parliament in favour of placing such persons as might be found only partially responsible for any crime (a provision of the amended penal code) in asylums and not in prisons. Committees were appointed to inspect the neighbouring asylums and other institutions, and finally to carry on the business of the Society until the meeting of 1878, which is to be held at Reggio.

Drs. Bufalini and Rossi have been continuing their experimental researches in the physiological laboratory of Sienna, and they publish an account of the secondary changes in the spinal cord after division of the lumbar nerves; a subject which Dickinson, Vulpian, and Haylem had previously investigated. The authors find, as the result of nine experiments, that the gray matter of the cord is not affected, but that the white matter is atrophied by diminution in the number of its constituents. This atrophy is most marked in the posterior and lateral columns of the cord, and does not extend above the lumbar enlargement.

Dr. Tebaldi relates a case of primary dementia, which came on gradually in a young man, in which he tried *Indian hemp* as a stimulant. In large doses it produced transitory delirium, with restlessness, but, not being persevered with, the patient returned to his former condition.

Dr. Morselli contributes an elaborate analysis of the statistics of *suicide in the Italian prisons*, of which I can only summarise the main points. These are:—

1. The frequency of suicide and attempted suicide is greatest in prisoners between 21 and 30; while in the population at large its frequency is greatest after 40 years of age. Probably the young feel confinement most.

2. Suicide is committed or attempted more frequently in prison by country people than by townspeople; this is the opposite of the rule for the country at large.

3. Nearly half the attempts of suicide (as is also true of the attacks of insanity) are made within the first year of imprisonment.

4. Twenty-three per cent. only of those who attempted suicide had been condemned to less than five years' imprisonment.

5. Two-thirds of those who attempted suicide had always been reported as well-conducted in prison.

6. The proportion of suicides in Italian prisons is lower than in other European countries for men; but the proportion in women is relatively higher.

7. Suicides are more frequent during the summer months than in winter.

8. There is no evidence that in Italy suicides are more common in prisons on the cellular system than in others.

Morselli is strongly of opinion that Dr. Nicholson rates much too highly the proportion of simulated attempts at suicide to the real ones.

A *new asylum* has been recently built at Voghera, for the province of Pavia, to contain 300 patients. The elevation and plans seem to combine abundance of ventilation with the shade required in a southern climate; but the airing courts are singularly small to our English notions, and the more excited patients are apparently provided with a series of separate courts for each patient, which would be still more strange to us. The building is on the plan of several blocks, eight being provided for each sex, and the patients classified in these.

Drs. Colombo and Pizzi have carefully examined the *specific gravity of the brain* in seventy post-mortems. They find it 1,023 for men, and 1,018 for women; but these figures also vary considerably according to age, the average (for both sexes) being 1,019 up to fifteen years of age, 1,026 between fifteen and forty-five, and 1,017 afterwards. The brains of insane patients vary considerably on either sides of these figures, the lowest they have observed being 1,013, the highest, in one containing many nodules of sclerosis, 1,044.

The eminent physiologist, Lussana, has recently published a

detailed study of the function of the *cerebral cortical centres*. He remarks particularly that in the following points the so-called motor centres in the convolutions differ from the motor centres in the cerebral peduncles, pons, and medulla :—1. Profound anæsthesia and asphyxia prevent the movements. 2. The movements are only produced by electrical, not by chemical or mechanical, stimulation. 3. If the centres are removed, only an incomplete and transitory paralysis results. He concludes that in these cortical centres we have the organs by which the will and the various instincts act upon the true motor centres, and that in the experiments performed electricity is substituted for the voluntary impulse. Professor Palmerini, of Sienna, applies this view to the symptoms of three cases which had been carefully observed during life and after death ; and suggests that incompleteness and variations for better or worse characterise what may be called cortical paralysis, and distinguish it from true hemiplegia. He does not seem to be aware of Dr. Hughlings Jackson's similar observations.

Dr. Gaspare Virgilio gives us the Report of a Committee of the Società Freniatria on the provision to be made for *criminal lunatics* in Italy, of which the main points seem to be the following :—They propose that, instead of having one asylum for the insane criminals of the whole of Italy, two or four smaller asylums should be established in connection with the principal prisons. In this way they think many of the inconveniences of Broadmoor, which they connect with its size, might be avoided, and the patients be more conveniently classified. The primary division they propose is between those who were insane at the time of committing the crime and those who only became so after conviction ; the former class they think should be treated in ordinary asylums as dangerous lunatics, and the latter only placed in criminal asylums. We learn incidentally that the committee believes the number of lunatics confined in Italian prisons to be very large, although there is no precise information on the subject.

The *Rivista Sperimentale di Freniatria e di Medicina Legale* continues to maintain the high character it had established in its two previous years. Much of its contents relates to branches of forensic medicine which do not come within the scope of this notice ; among the other papers, I may remark especially upon the following :—Dr. Adriani has made some experiments on dogs, from which it would appear that the muscular weakness, giddiness, and apathy so often observed during the administration of *bromide of potassium*, are probably due to an admixture of the bromate of potash. He has considerable faith in the curative action of the bromide in epilepsy, but considers it often necessary to push it to $7\frac{1}{2}$ drachms a day, and continue its use for months or even years. Drs. Morselli and Tamburini continue their examination of *idiots*, laying particular stress on the points in which they resemble the inferior races of mankind.

Such are their lesser size, the greater rapidity of the pulse, the foul-smelling cutaneous secretion, a slight varus (so that they stand on the outer side of the foot), and their mode of walking with the body inclined forwards and swaying from side to side. Professor Livi's last essay is upon "*Monomania*," and is principally remarkable for the great clearness with which he distinguishes moral from impulsive insanity, and ascribes the former to an insensibility to higher motives, so that the lunatic satisfies his desires without fear or shame.

Tamburini calls attention to the frequency with which osteomata are found upon the spinal arachnoid in cases of *general paralysis*, particularly when there have been symptoms of ataxia or paraplegia during life. In a clinical lecture on the same disease, he adds another explanation to those which have been previously suggested to account for the inequality of the pupils; he ascribes it to irritation, ending in destruction, of a cortical motor centre which governs the movements of the iris.

In 1876 one Carlino Grandi was tried at Florence for the murder of four boys, whom he had enticed into his shop in a Tuscan country village, and killed with such secrecy that he was not suspected until passers-by heard the cries of a fifth child whom he was about to strangle. The man had all the appearance of an idiot; he was perfectly bald; though twenty-four years of age, there was no sign of puberty, and his mind was equally ill developed. His object in putting the children to death seems to have been to revenge himself for their jests on his personal appearance. His insanity was testified to by three experts, and by the Governor of the gaol; yet the Court sentenced him to twenty years' penal servitude.

Among the numerous articles of interest in the *Rivista Clinica* of Bologna, there are only a few that concern us. Dr. Raggi gives a detailed account of the relations of *pyrexia* to insanity. He does not throw any light upon the temporary improvement which so often in chronic lunatics accompanies febrile diseases, or the permanent cure which these sometimes produce. But he shows, by their diversity, that the pyrexia is the one efficient factor in such cases; and he suggests that probably the good results of violent counter-irritation may be due to the fever with which it is accompanied.

He also gives a description, based upon three cases, of a variety of insanity, which he terms *clithrophobia*. This is the exact opposite of Westphal's "*agoraphobia*," the patient being alarmed at being confined in any room, and becoming violent in consequence. When analysed, this seems to be based upon some morbid sensations or apprehensions of difficulty of breathing when shut up in a narrow space.

In a third article, he suggests that the *epileptiform attacks* in the course of general paralysis and other forms of insanity may be due to stasis in the meningeal veins, which he has observed post-mortem in two such instances. He considers that when the meninges are

thickened any slight disturbance of the circulation from mental excitement or constipation would suffice to cause this.

Considerable attention has been devoted of late in Italy to what is called the "patronato," *i.e.*, finding suitable provision and occupation for patients who are discharged recovered from asylums. In Venice, in particular, F. Salerio's last work was to establish workshops and a home for patients who had recovered, but who did not wish, or were not suited, to return at once to the outer world.

PART IV.—NOTES AND NEWS.

THE MEDICO-PSYCHOLOGICAL ASSOCIATION.

A Quarterly Meeting of the Medico-Psychological Association was held in the Hall of the Faculty of Physicians and Surgeons, Glasgow, on Friday, 15th March, 1878. There were present—Drs. Yellowlees, Gartnavel; Robertson, Glasgow; McLeod, Carlisle; Cameron, Lochgilphead; Ireland, Larbert; Clouston, Morningside; Wallace, Greenock; Rutherford, Lenzie; Prof. Gairdner, Glasgow; McLaren, Larbert; Skae, Ayr; Fairless, Bothwell; &c.

Dr. ROBERTSON in the Chair.

Dr. CLOUSTON read a paper by Dr. Turnbull, Morningside, on a case of "Hallucinations of Four of the Special Senses." (See p. 97, Jan. No.)

Dr. ROBERTSON said—The case is one of a class which, at all events, in large cities, is rather common. It is certainly, however, not usual to find so many of the senses affected in the same person, though I have seen similar cases. There is an occasional feature observable in hallucinations, particularly so far as my experience goes, when these are due to alcohol—they may be unilateral. This applies specially to the organ of hearing: the imaginary voices may be heard only in one ear, or in one much more than the other. This peculiar condition is most common where the cause is acute alcoholism, though I have met with it in cases of the chronic form of that disease. These one-sided phenomena in the sphere of mind correspond, I think, to unilateral convulsions and hemianæsthesia in ordinary bodily disorders. In addition to the tendency to suicide referred to in the paper, there is occasionally a disposition to homicide. In Dr. Turnbull's case, it is somewhat exceptional that the hallucinations of sight should be secondary to those of hearing; they usually arise first, or simultaneously with those of hearing.

Dr. IRELAND said—I think it would be a useful subject for research for many of our members to ascertain what is the anatomical substratum affected in these cases. Hallucinations implicating four of the special senses would indicate a diseased condition of a considerable portion of the nervous tract which is set apart for conducting impressions received from the periphery. Dr. Ritte, in a recent paper, has tried to prove that hallucinations are due to disease or irritation of the optic thalami. This theory is based upon the researches of Dr. Luys, who thought he had found nuclei lying near one another in the optic thalami, in which the impressions of the different senses are elaborated. It would be interesting to know whether this has been confirmed by the observations of any of our members.

Dr. YELLOWLEES thought this case a very typical illustration of the "Insanity of Intemperance." It is singular, when the special senses were so fully involved, that the sense of smell was not implicated. Such patients very frequently complain of unpleasant odours and poisonous gases. Sometimes they seem possessed by a universal suspicion, and all the information derived through

the senses is coloured and perverted by this mental condition, so that the patient really labours under delusions of suspicion rather than under disorder of the special senses. The poison of alcohol produces very different effects in different persons. Some drunkards never have delirium tremens, but, after, perhaps, one or two transient acute attacks, sink into the chronic insanity of intemperance. Others have many successive attacks of delirium tremens, and never become insane in any other form. We do not know the reason of this difference.

Dr CLOUSTON thought the most wonderful thing about the case was the recovery of the patient.

Dr. ROBERTSON read a paper entitled "Observations on some points in Cerebral Pathology, and on Percussion of the Skull." (See "Original Articles," p. 224.)

There was then a discussion on the evidence given before the recent Commission on the Lunacy Laws in which Drs. Robertson, Ireland, and Yellowlees, took part.

MEDICAL OFFICERS QUALIFICATIONS BILL.

Dr. FAIRLESS laid upon the table a copy of a Bill which it was intended should be introduced into the House of Commons, by Mr. Errington, entitled "The Medical Officers Qualifications Bill." He pointed out that among other things, a new examination was to be demanded of all Asylum Superintendents, Parochial Medical Officers, and, indeed, of all who held any public appointment. In support of this he read the following excerpt from the Bill :—

2. *From and after the first day of January, 1879, clause thirty-six of the Medical Act shall be and is hereby amended as follows:—No person shall hold any appointment as a Physician, Surgeon, or other Medical Officer in the Military or Naval Service, unless he be registered under this Act; and no person shall hold any appointment as a Physician, Surgeon, or other Medical Officer in Emigrant or other Vessels, or in any Hospital, Infirmary, Dispensary, or Lying-in Hospital, not supported wholly by voluntary contributions, or in any Lunatic Asylum, Gaol, Penitentiary, House of Correction, House of Industry, Parochial or Union Workhouse or Poorhouse, Parish Union, or other Public Establishment, Body, or Institution, or to any Friendly or other Society for affording mutual relief in Sickness, Infirmary, or Old Age, nor as a Medical Officer of Health, unless he be registered under this Act, and unless IN ADDITION TO BEING SO REGISTERED, he shall also have been examined and declared competent for such appointments by an Examining Board to be constituted as hereinafter provided.*

3. *Within a period of three months after the passing of this Act the General Medical Council shall appoint an Examining Board, consisting of three Examiners from England, three from Ireland, and three from Scotland, whose duty it shall be to examine all persons who, being already duly registered under the Medical Act, shall present themselves for Examination, and who, on passing such Examination, shall be entitled to append to their names on the General Medical Register the letters C.M.B., signifying Civil Medical Board, and shall be eligible to hold public appointments as provided in clause two of this Act.*

Dr. FAIRLESS then requested Dr. Wallace to favour the Association with a statement regarding some meetings which had been held in Greenock on the subject.

Dr. WALLACE said—Mr. Stewart, the Member of Parliament for Greenock, sent me a draft of the Bill referred to, "The Medical Officers Qualifications Bill." It is of a most monstrous and anomalous character; indeed, it is a direct encroachment on the rights and privileges of our profession. It provides that any medical man may practice as a private physician or surgeon, or in any such institution as the Royal Infirmary of Edinburgh or Glasgow, but that no medical man shall hold a public appointment without undergoing a certain examination, for which there must be paid an extra fee. I think it absurd for a private member to introduce into Parliament a measure of such a sweeping character. I am glad to say that Mr. Stewart is fully alive to the unjust nature of the Bill, and is prepared, if necessary, to move that it should be read that day six months, which is equivalent to its rejection.

After some conversation, it was agreed that the prospects of such a Bill becoming law were so remote, that no immediate action was necessary on the part of the Association.

A vote of thanks to the Faculty, for the use of their Hall, terminated the proceedings.

RETIREMENT OF MR. JAMES WILKES FROM THE COMMISSION IN LUNACY.

After a long and most honourable career in connection with lunacy, Mr. JAMES WILKES, F.R.C.S., one of the Medical Commissioners in Lunacy, has retired. He entered the profession of medicine in 1834; was for fifteen years Medical Superintendent of the Asylum at Stafford, where he showed such administrative ability, and brought the asylum to such a high state of perfection, that he was selected as one of the Commissioners. He has held that position for twenty-three years, doing his duty earnestly, zealously, and fearlessly. To say that he was universally liked would be to say that he did not do his duty in the positions where he was often placed, but we say, without fear of contradiction, that he was generally respected. Though, in our opinion, he yielded too much to the strong influence that tends to make an English Commissioner an official pure and simple rather than a physician, yet his sympathies went always with his professional brethren. He knew the difficulties of asylum management too well from experience, not to make allowances for inevitable accidents if the Superintendent was doing his duty. He had the genuine philanthropic spirit, without which no man should have anything to do with the insane.

The great work he did, by which he will be best remembered, was the leading part he took in founding the important Registered Lunatic Hospital for the middle-classes at Coton Hill, Stafford. He carries with him to his well-earned retirement the heartiest wishes of his professional brethren that he may long and happily enjoy it.

APPOINTMENT OF DR. W. RHYS WILLIAMS AS COMMISSIONER IN LUNACY.

W. RHYS WILLIAMS, M.D., has been selected as Commissioner in Lunacy by the Lord Chancellor, in place of Mr. Wilkes, who retires. Dr. Williams has held the appointment of Medical Superintendent of Bethlem Royal Hospital for twelve years; the reputation of that venerable institution having steadily grown under his management. For the past three years he has held the position of Honorary Secretary to the Medico-Psychological Association, the members of which will, we are sure, join very cordially with us in congratulating him on his promotion.

LUNACY CLAUSES OF THE NEW MEDICAL ACT AMENDMENT BILL.

In this Bill, as passed by the House of Lords, there is a provision for remedying the present anomaly of Scotch and Irish medical men not being able to sign lunacy certificates for Asylums in England, and *vice versa*. In the original Bill the present power of asylum medical officers in Scotland to sign certificates of emergency, or one of the two certificates required for the admission of a pauper patient into a public asylum was, no doubt, by inadvertence withdrawn, and, in fact, such certificates were made penal, but the Asylum Superintendents in Scotland drew up a statement in regard to this matter, showing the conveniences and uses of the present practice which was adopted by the Council of the College of Physicians of Edinburgh, and sent by them to the Duke of Richmond, who promptly amended the clause in accordance with their representations.

OBITUARY NOTICES OF THE LATE SIR JAMES COXE.

The death of Sir JAMES COXE has removed suddenly from the scene of his useful labours one whose public life was inspired with a singleminded zeal to promote the measures most conducive to the welfare of the insane and the

interests of the community, and who in private life won the hearty esteem of all who were able to appreciate the sterling excellencies of a sincere and genial character. They cannot but feel some natural grief at his death, but, happily, they will not mourn it as that of one who was called away prematurely before the work was done to which he had set his hand. His fresh and hearty look certainly seemed to give the fair promise of a long and genial eventide of life; but, as the event has proved, the promise was deceptive. His large share in the inquiry into the condition of the insane in Scotland, which went before and laid the foundation for the establishment of the Scotch Lunacy Commission; the earnest and open-minded spirit in which he has guided its policy since its establishment; the high position of usefulness in which he has maintained it from the beginning, and has now left it—these will be the legacy of a lasting benefit to his country and the honour of his memory through many generations.

In another part of this Journal we have reprinted the appreciative notices of his life and labours, which appeared at the time of his death in the "Edinburgh Courant," and in the "Scotsman." From them we learn that his thoughts were directed to the special study of mental disorders at an early period of his career. He attended lectures on insanity, and visited the Asylums at Paris while he was yet a student, and he had at one time the design of establishing a private asylum in the neighbourhood of Edinburgh. He relinquished this scheme and medical practice after his marriage with the accomplished lady who died three years before him, but who will live gratefully in the memories of those who enjoyed the privilege of her acquaintance. Sir James's studies of the treatment of the insane were continued systematically throughout his life; he visited frequently the asylums, public and private, in this country and on the Continent; and nothing was more remarkable in his character than the earnestness with which, to the last, he sought to learn personally what was being done in different countries, and the openness of his mind to new impressions. This varied experience and his large general culture fitted him excellently for the work which he accomplished. His mind did not run in the groove of routine; he brought to the consideration of all questions of lunacy administration a singular freshness of view which was abundantly shown in the successive official reports of the Board. Perhaps some might think that this tendency in him ran a little to excess, leading him to go counter to received opinions concerning lunatic asylums, whether good or ill, and that the practical experience of life in an asylum would have compelled him to modify the expression of some of his views. But it is a question whether he would not have lost more than he would have gained by the practical training which he lacked; whether, had he had it, he would have preserved the openness and freedom of mind which made him welcome new ideas, and always encourage new experiments. To be reared and trained in a system of routine is not the best preparation for seeing outside it; and Sir James Coxe's name may be added to the list of those who, coming into the speciality from without, and having a wider culture than it alone can give, have done the best work and gained the highest eminence in it. Pinel was great as a writer on nosology, as well as great as a reformer in lunacy administration; Prichard's "Treatise on the Natural History of Man" was a higher title to the fame which he enjoyed, than his writings on insanity, excellent as they were; Conolly was distinguished in general medicine, and was in practice as a physician until, when he was past forty years of age, he devoted himself specially to asylum work, and carried through the great reform which he accomplished at Hanwell; and Griesinger was a distinguished general physician, with a large consulting practice, who studied mental disorders as a part of the great subject of nervous diseases.

Sir James Coxe's work was mainly administrative; he did not give particular attention to the scientific study of mental diseases, but he held and earnestly enforced large and philosophical views with regard to the prevention of them by sound education and wise government of self. He saw clearly, as a nephew

of the Combes was likely to do, the power which man has to modify his constitution through the ages by recognition of the reign of law in human development, and the momentous responsibility which such a knowledge imposes upon him. Free from the narrow notion, too often bred of mere asylum training, that insanity is something of constant quantity and uniform quality, to be dealt with by one and the same routine, he recognised the manifold varieties of mental disease and deficiency, and plainly saw that different measures of care and treatment might usefully be adopted, not only according to the degree and character of the disease, but according to the different social conditions in different countries. To the out-door employment of patients he attached a great but not undue value, although it may be admitted that his too exclusive appreciation of such measures of treatment led him, in some degree, to overlook the medical aspect of the disease, and to undervalue the resources of medical art. But it was almost inevitable that a person of his sincere and simple character should be carried a little too far in his opinions by the reaction which his perception of the exaggeration of the merits of asylum management and his distrust of popular appeals to public approbation would occasion. The time will come, doubtless, when medical treatment will do a great deal more than it does now to bring about recovery from mental disease; at present one is driven to confess that patients, for the most part, are not cured, but recover.

Of Sir James Coxe's private virtues we shall not speak here. They are known to all who had the honour to be counted among his friends. Suffice it to say that with them the sense of personal loss will be likely to outweigh their sense of the public loss. If he had any enemies they were those whom good men would gladly count among their enemies.

From the Scotsman.

SIR JAMES COXE, Commissioner in Lunacy for Scotland, died at Folkestone, on the 11th of May, 1878, on his way home from the Continent, where he had been spending part of a few weeks' release from official duties. The announcement will be received with deep regret by a very large circle; all who came in contact with Sir James, officially or otherwise, will deplore in his unexpected removal the loss of a man of eminent capacity, of admirable zeal and diligence in duty, and of the most upright and endearing personal character.

James Coxe was the son of Robert Coxe, of Gorgie, where he was born in 1811. His mother was a sister of George and of Andrew Combe—the one distinguished throughout Europe and America as the author of the "Constitution of Man," and chief apostle in this country of the science of phrenology; and the other not less widely celebrated by his valuable popular works of a medical character, on "Physiology," "Digestion," "The Management of Infancy," &c. By the comparatively early death of his father, Sir James and his brothers were left mainly to the guardianship of their uncles, in conjunction with Mrs. Coxe, herself a woman of exceptional capacity. His eldest brother was the late Mr. John Coxe, of Gorgie, a well-known and public-spirited citizen of Edinburgh, who filled several honourable civic offices; another was Mr. Robert Coxe, the author of "Sabbath Laws and Sabbath Duties;" and a third, Dr. Abram Coxe, who became, like James, a student of medicine, and ultimately for many years a practitioner at Kingston-on-Thames. As a member of an intellectual family, and evincing decided ability, Sir James's education was systematic and thorough, and was pursued not only in his native city, but at Gottingen, Heidelberg, and Paris; at the age of 24 he took his degree of M.D. at the University of Edinburgh. He subsequently practised medicine in this city, though after his marriage in 1841 he confined himself mainly to consultation, and occupied much of his time in revising and editing the successive editions of Dr. Combe's works, and similarly assisted Mr. George Combe in almost all his later literary labours. It was not, how-

ever, for some time after that Sir James found his true sphere and function. In 1855 a Royal Commission was appointed "to inquire into the condition of Lunatic Asylums in Scotland, and the existing state of the law of that country in reference to lunatics and lunatic asylums." The members of this Commission were Mr. Sheriff Earle Monteith, Dr. James Coxe, Mr. Samuel Gaskell, and Mr. W. G. Campbell. The report of the Commissioners, drawn up by Dr. Coxe, was presented to Parliament in 1857, and disclosed such a chaotic condition of the arrangements for the care of the insane in Scotland, and such prevalence of neglect, cruelty, and mismanagement, as surprised and shocked Parliament and the country, and led to the passing in the same year of an Act establishing the General Board of Lunacy for Scotland, of which Lord Melgund (now Earl of Minto) was chairman, and Sheriff Young (now Lord Young), the late Sheriff Moir, James Coxe, M.D., and W. A. F. Browne, were named as Commissioners—the two latter only being paid Commissioners. It may here be mentioned that Lord Minto was succeeded as chairman by Mr. Forbes Mackenzie, on whose death Sir John Don Wauchope became and continues the head of the Board.

It is not too much to say that from its institution till now Dr. Coxe has been the life and soul of the Board of Lunacy, and that to him its admirable conduct and highly satisfactory working and results are mainly due. His attention having been early turned to the study of mental phenomena in connection with the physiology and action of the brain and the nervous system generally—a study which he had not remitted either through his early professional life or the subsequent period of comparative leisure—he was marked out as pre-eminently fitted for so onerous and responsible a position—an aptitude which was further emphatically recognised by the honour of knighthood being conferred on him in 1863. Though educated in the phrenological theories of his uncle, he brought to his work no narrow or prejudiced views in connection with that or any other psychological system; his whole career as a Commissioner was all along marked by efforts as enlightened as they were strenuous to improve the condition of the insane by the gradual introduction of more and more liberal methods of treatment. The intimate knowledge of their condition—whether as inmates of asylums, poorhouses, or otherwise throughout Scotland—he supplemented by frequent personal visitation of English and Continental establishments; and by careful examination of various exceptional methods of the treatment of the insane—such, for example, as that pursued at the Lunatic Colony of Gheel, in Belgium. The reforms introduced by the Board naturally led to opposition on the part of parochial and other authorities, with whose functions and notions of economic management the more humane system insisted upon by the Commissioners materially interfered. This opposition culminated in an endeavour in 1862 to prevent Government arranging for the continuance of the Board, the original Act having limited its existence to five years. But discussions in Parliament and the Press only served to exhibit more fully and publicly the great value of the work accomplished by the Board, and the absolute necessity for its perpetuation. Year by year the reports presented to Parliament have amply justified the existence of the Board, presenting as they do a record of steady yet rapid amelioration in the management of the insane altogether unparalleled; till Scotland, from having been one of the worst, is now one of the best managed countries in the world in regard to the treatment of the insane. It is no small part of the merit of this amelioration and reform that they have been at the same time effected with the strictest regard to economical conditions. These reports were all drawn by Sir James, except the four last of the series, which were written by Dr. Arthur Mitchell, his colleague from the commencement—first as Deputy-Commissioner, and latterly as Commissioner.

Sir James was examined before the Parliamentary Committee on Lunacy in

April, 1877, and his evidence was reckoned among the most valuable educed on the occasion. Beyond those official documents, and many contributions to the Press on his special subject, Sir James, fully occupied by his official duties, had little time for other literary work. In the present year, however, he published an able pamphlet on "Lunacy in its Relations to the State," in which he discussed the general bearing of the evidence of the Commission just referred to, and indicated the direction and spirit in which future legislation in the management of the insane should be undertaken. That spirit was, it need hardly be said, an enlightened and liberal one; and the direction that of the relaxation of all official restrictions so far as consistent with the welfare of the patients and of the community. Much of his leisure also for the last two or three years has been given to the superintendence of the memoir of his uncle, Mr. George Combe, written by Mr. Charles Gibbon, and just issued by Messrs. Macmillan. These were his casual occupations. The work of his life was the sedulous discharge of his official duties, and the influence that he exerted in the administrative reform of the Lunacy Laws in Scotland, and for the improvement of the condition of the insane, cannot well be over-estimated. Probably no man in a similar position has carried out with such unflinching application so revolutionary a change in a manner so totally devoid of offence, even to the parties most immediately interested and most obstinately prejudiced. This result was largely due to Sir James's personal character. With a thorough love of justice, and a firm belief in the moral government of the world, by which just ideas and modes must ultimately triumph, he was ready to make the most ample allowance for the weakness of human nature, and conciliated to the utmost degree consistent with the carrying out of the objects he had in view, the instruments through which they were to be effected. With a gentle geniality of disposition, and a quiet humour that enabled him often to effect by a joke what could not be accomplished by an argument, he would induce officers of the institutions which he supervised to undertake what seemed to them dangerous or impossible, converting them to his views by their own experience. Ultimately his principles and methods received universal and ready recognition and acceptance, and probably no department of what may be called sanitary discipline and administration in any country now bears so distinctively the impress of the mind and work of one man as the management of the insane in Scotland does that of Sir James Coxe. His industry and vigilance in inquiry and in study of all relating to his special subject were unwearied. But though fully alive to every novelty, he was wisely chary of introducing innovation, thoroughly maturing every proposal of change, and testing it by general principles before even partially applying it. Conscientiousness was a family characteristic; in him developed very fully but very healthily, guiding and ruling without paralysing him. Slow to judge, and perhaps unduly diffident in his own judgment, his opinions were always carefully matured and his sound sense and thorough integrity stamped them with sterling value. The high and fine qualities which enabled him to discharge so acceptably his delicate and responsible official duties, equally tended to endear him to his personal friends, of whom he had troops in all ranks and conditions of men and women. For a number of years he has resided at Kinellan, Murrayfield, and there, with Lady Coxe, who pre-deceased him three years ago, he exercised a generous and catholic hospitality among a circle of intellectual friends and visitors, to which, unfortunately, there are now few or no parallels in modern Edinburgh society. Lady Coxe, who was the daughter of Robert Cumming, Esq., of Logie (her mother was Burns's "Bonny Lesly"), was a woman of remarkably vigorous intellect, and of varied accomplishments; and her death in 1875, after a most happy union of four-and-thirty years, was a blow from which Sir James, with all his fortitude and manly resignation, had never really recovered. Her brother, Dr. James Cumming, who many years ago acquired no inconsiderable literary reputation as the author of a volume of travels entitled, "Notes of a

Wanderer," and who resided with his sister and brother-in-law at Kinellan now mourns this second irreparable bereavement.

Sir James was President of the Medico-Psychological Association at its meeting in Edinburgh in July, 1872, and on that occasion delivered an inaugural address which, while it perhaps startled the auditors by the boldness and reach of the views enunciated, also reconciled them to those views by the cogent arguments and examples with which they were sanctioned and enforced. He entertained the Association at a banquet in the Douglas Hotel, and those of his personal friends who were privileged to be present on the occasion were equally impressed and gratified by the warm and unanimous expression by his professional brethren of the very high estimation in which they held the work and character of their host. Though not obtrusive in public affairs, from which indeed, his essential modesty of character rather inclined him to keep apart, Sir James was always ready to give countenance and aid in the promotion of all measures of political, and especially of educational advancement, and was a liberal supporter of movements and institutions calculated to promote the true well-being of the people.

From the Edinburgh Courant.

The death of this distinguished citizen has not only filled with sorrow a wide circle of warmly-attached personal friends, but is regarded by the general community as a public loss. For many months he has not been in his usual health, and he left home about the end of April with the intention of spending a few weeks on the Riviera. He and the friend who accompanied him halted for some days in Paris, and it was there he was attacked with the illness which proved fatal on the 9th. He was so anxious to return to Edinburgh that he, perhaps unwisely, undertook the journey home. After resting at Boulogne, however, he crossed to Folkestone apparently without injury, but the day after his arrival there he became much worse, and died in the evening.

Sir James Coxe was born at Gorgie in 1811. His mother was left a widow while he was still young, but she was a woman of great character and ability, and in the bringing up of her children she had the advantage of being counselled by her brothers, George and Andrew Combe. Her son James chose the profession of medicine, and in carrying out his education—which was unusually complete—he spent some years on the Continent. To this was due a knowledge of several modern languages, which often proved serviceable to him in the prosecution of his favourite studies. From the outset of his career as a medical man, his thoughts were directed in a special manner to the study of mental disorders; and his leanings in this direction were probably encouraged by the Combes, with whom he was in constant association. In Paris and elsewhere, while still a student, he diligently followed courses of lectures on insanity, and made himself acquainted with the various ways of treating the insane which were then practised both on the Continent and at home. At one time, indeed, he had it in contemplation to establish and conduct a private asylum in the neighbourhood of Edinburgh. His marriage, however, with Mrs Fraser, one of the Cummings of Logie, and daughter of the "Bonny Lesly" of Burns, led to his relinquishing the practice of his profession, and to his retirement for a time from Edinburgh. But when the investigations of Miss Dix into the condition of the insane poor of Scotland brought about the appointment of a Royal Commission of Enquiry in 1855, Dr. Coxe was chosen by the Government as one of its members, and it fell to him to write the larger part of that report, which was so highly complimented by Sir George Grey in the House of Commons, and which resulted in Lord Moncrieff's Lunacy Act. Under that Act Sir James Coxe became, in 1857, one of the two paid Commissioners, and he continued to hold the appointment till the day of his death, devoting to the discharge of his duties, in the most literal manner, the whole of his mind and his time. He was

naturally a conscientious man, faithfully performing everything he undertook, even in affairs which were of a private character; but as a public servant his conscientious performance of duty stood out in a manner which commanded the respect and admiration of all who came in contact with him. It is not surprising that a quality of this kind, when associated with a large knowledge of his subject, made him a great power in the administration of the lunacy law of the country. That law derived its colour from the report of the Royal Commission to which reference has just been made, and the chief part of which was written by himself; but in 1862 and 1866 the law underwent important modifications at his suggestion; and these modifications have given it a very special character, which has attracted the attention of Continental and Colonial Governments. Several of the changes thus introduced into the Scotch law are recommended for adoption in England in the recently published report of the Select Committee of the House of Commons on the Lunacy Laws. Before that Committee lengthened evidence was given both by Sir James and by his colleague, Dr. Arthur Mitchell, who has steadily supported him in all his views. These views received opposition in many quarters where they are now accepted both as benevolent and just in their spirit, and as capable of being safely and advantageously put into practice. Sir James happily lived long enough to see his opinions triumph. If he had lived still longer he might perhaps have gone further, for his interest in his work was as great at the very close of his life as it ever was. In evidence of this it need only be stated that on his way to the Continent he spent two days in London examining the asylums for incurable and inoffensive lunatics and for idiotic and imbecile children, which have been created in late years under the Metropolitan Poor Law Act.

In private Sir James overflowed with geniality. No one relished a joke more than he did, and few could make one with better effect. But his sense of humour perhaps appeared even more strongly in his correspondence than in his conversation, and there are not a few of his intimates who have preserved his letters for the rich store of humour which they contain. He was steady and chivalrous in his friendships. He drew strongly to men of honest and good purpose; yet he was charitable to the shortcomings and weaknesses of his fellows, and was ever ready to soften faults which did not spring of a mean or untruthful nature.

His married life was long and happy, extending over thirty-four years. Lady Coxe died about three years ago, and he never ceased to feel her loss. His friends, indeed, were of opinion that her death permanently injured his health, though he maintained a cheerful spirit, and continued to interest himself in all public measures which were designed either to promote the education of the people, to lessen the evils of intemperance, or to relieve the sufferings of the poor.

THE LATE DR. ROBERT GARDINER HILL.

This veteran lunacy reformer died suddenly of apoplexy at his residence, Earls Court House, Old Brompton, London, on the 30th May. He was born in Louth in 1811, was educated at Guy's and St. Thomas' Hospitals, and entered the medical profession in 1834. In 1835 he was appointed Medical Superintendent of the Lincoln Lunatic Hospital, and held this office for five years. It was during this period that he proposed and practised the mode of treating insanity without any mechanical restraints, a procedure fraught with momentous results to the insane, for it led to Dr. Conolly's adoption of the doctrine or "Principle" of Non-Restraint, and to the almost universal practice of this principle in England. Those who do not go the whole length of Dr. Hill and Dr. Conolly in regard to this matter, do not and cannot deny that restraint had been grossly abused before their time, and that the insane and asylums suffered much in consequence, and that this has now been changed by their influence. This is not the time or place to enter fully into the matter, but assuredly the

name of Gardiner Hill is not one that will soon die. It was in 1836 that he first advocated the entire disuse of restraint. His best known work was entitled, "A Concise History of the Entire Abolition of Mechanical Restraint in the Treatment of the Insane." His life was a happy and successful one as the proprietor and physician to the private asylum where he died.

Correspondence.

DR. W. P. PHILLIMORE AND ERYSIPELAS IN ASYLUMS.

To the Editors of the Journal of Mental Science.

GENTLEMEN,—In this letter it is not my intention to discuss at length the absolute necessity for pathological research in our special department of medicine. At this time of day it would be insulting to common sense to enter into an elaborate argument to prove that certain progress in our knowledge of mental diseases must depend almost entirely upon our more intimate acquaintance with the anatomy, physiology and pathology of the various nerve centres, and that we must, instead of abandoning post mortem examinations, conduct these with increased accuracy and care. When, therefore, a physician prints the letter given below,* I can only express surprise and regret that a gentleman, engaged in the pursuit of scientific knowledge, but objecting "to being compelled to pursue one branch of scientific knowledge whilst engaged in another more suited to his taste and inclination," should entertain such opinions. This remarkable letter formed the subject of correspondence between myself and some of my more intimate friends in the speciality, but we decided that we should let it pass into oblivion, as it was too ridiculous and feeble to do any mischief. We felt that so long as Dr. Phillimore had nothing more reasonable to urge against the performance of post mortem examinations in asylums, he might with perfect safety be left to his own views and practice.

But the position of affairs has been entirely changed by a paragraph in Dr. Phillimore's last annual report. He says: "In the Blue Book of the Lunacy Commissioners for 1877 it is shown that erysipelas has been a fatal and troublesome epidemic in some well-constructed modern asylums. The coincidence between this and the practice of making numerous and indiscriminate post mortem examinations would seem to point to some close relation existing between the two." Here we have a clear suggestion by Dr. Phillimore of a possible and probable cause of erysipelas in asylums. He appeals to the last Blue Book. Does it give the slightest support to his theory? None whatever. Indeed I cannot understand how any scientific or intelligent person could have ventured to appeal to such a source, considering the facts there reported. Dr. Phillimore in his own report on the state of his asylum during 1877, says: "There has been no epidemic of erysipelas, fever or diarrhœa, diseases which occasionally prevail in large institutions. It may be inferred that the sanitary arrangements are sufficient, and the diet wholesome." All will agree with him that his statements here are sound. If, therefore, he had said it was probable that in some modern (and old) asylums erysipelas (typhoid and diarrhœa) prevailed through defective sanitary arrangements and improper diet, all would have said Amen. But he is guilty of the absurdity of trying to prove that his asylum is in a healthy state because of its good sanitary arrangements, and that erysipelas prevails elsewhere, not because the sanitary arrangements are bad, but because post mortem examinations are made.

Now as to the statements in the Blue Book for 1877, I have gone through the report of every County and Borough Asylum, and extracted those portions bearing on the sanitary conditions of the buildings and their inmates. Every sentence referring to erysipelas, typhoid and diarrhœa, is given below, with all remarks concerning the state of the drains, overcrowding, &c., &c. I have included typhoid and diarrhœa in the notes because they are as valuable indications of the sanitary state of a building as erysipelas.

* See p. 333.

The following are the extracts :—

EXTRACTS FROM 31st REPORT OF THE COMMISSIONERS IN
LUNACY.

BEDS, HERTS AND HUNTS.—“The proportion of deaths due to pulmonary consumption and other causes of lung disease is large, and has probably been influenced by the over-crowding which has taken place in this Asylum during the last two years. Although there has been only one fatal instance of erysipelas, the disorder has frequently made its appearance among the patients. The imperfect ventilation of some of the sewers and drains leading to the cesspools has been considered to be one of the causes, and the defect, which is a grave one, has been to some extent remedied. Further improvements in this direction are, however, needed, and will, we hope, be carried out speedily.”

BUCKS.—“There have been a few isolated cases of erysipelas, but no disorder of an epidemic or contagious kind has prevailed.”

“Throughout clean and well warmed and ventilated,” but “the infirmaries in both divisions are deficient in day-room space, and an addition in that respect is very desirable. This asylum is also at present without the very necessary convenience of a separate building for the isolation of cases of contagious or epidemic disorder.”

“Asylum all but full, only six male and four female beds vacant.”

CAMBRIDGESHIRE.—“The fatal case of erysipelas occurred two days ago. Though no patient is at present suffering from this disease, its recent reappearance on the female side, in the present crowded state of the house, and with the defective sanitary arrangements as regards the position and insufficient number of the water closets, is a source of much anxiety.”

“The wards were clean, but the atmosphere in the Female Ward, No. 2, occupied by the least favourable class, was necessarily, owing to over-crowding, somewhat tainted.”

CORNWALL.—“One of the latter [a woman] was recovering from erysipelas. During the spring erysipelas was epidemic in the Asylum, and upwards of 40 patients were afflicted, and though some cases were of a severe character, no death occurred. Dr. Adams cannot account for the origin of this disorder, but over-crowding had probably something to do with it. We are glad to hear that it is proposed to erect a small detached hospital for contagious or infectious diseases, and we hope it will be proceeded with at the earliest period.”

DERBY.—“There has been no epidemic, but one patient was attacked by erysipelas in the head and face. The water-closets are structurally bad, but they were fairly well ventilated. We are informed that since the Commissioners' visit, in 1875, the drains communicating with the water-closets have received much attention, and are now ventilated freely by ascending pipes, and also trapped in all necessary directions.”

DEVON.—“It will be observed that one man and two women died of erysipelas. This disorder made its appearance in the Asylum on the 27th of April in the present year, since which date there have been 15 cases, and all but one of them occurred in the female division, only one ward on that side of the house having escaped.”

“Dr. Saunders is of opinion, and we concur with him, that the extent to which this disorder has appeared on the female side of the house is probably due to overcrowding in that division, and also to the defective position and arrangements of the water-closets. These latter defects were specially pointed out by two members of our Board, in their entry in this book of September, 1874, with reference at that time to the prevalence of diarrhoea, and we desire again to bring this important matter under the consideration of the Committee of Visitors.”

HEREFORD (COUNTY AND CITY).—“Of the deaths, four were attributed to general paralysis, three to other diseases of the brain, and one to melancholia and diarrhoea. Neither erysipelas nor enteric fever has again attacked any one.”

“There are no vacant beds for females.”

LANCASHIRE (RAINHILL).—"There were a few cases of erysipelas in the early part of the year, but no fatal result."

"The earth-closets in each division were not, when we inspected them, altogether in an unobjectionable state. At present these closets partake much of the nature of privies, and we think that they are decidedly open to some improvement if the system of earth-closets is to be adhered to."

MIDDLESEX (COLNEY HATCH).—"With regard to the health of the patients, we find that there have been a few cases of erysipelas in both divisions, but otherwise there has been no disorder of an unusual character."

"Two women died from erysipelas."

"Both divisions of this Asylum are now practically full, and in the female side we think that the floor-space of some of the dormitories is scarcely sufficient for the number of beds occupying it."

"Nothing has yet been done to remedy the insufficiency in number and the defective arrangements of the water-closets, and we desire to bring this matter before the special attention of the Visitors."

MIDDLESEX (HANWELL).—"Typhoid fever made its appearance in the Asylum in the autumn. Two laundry maids and a patient of each sex were attacked. The male patient died, but the rest recovered. The cause of this fever has not been ascertained....."

OXFORD.—"We found seven men and 17 women in bed, of whom one man and six women were affected with erysipelas, but the cases were not severe. The disease has, however, been prevalent for some time past, although not fatal in any instance. The cause has not been satisfactorily ascertained."

"We were not quite satisfied with the ventilating of the closets, sinks, bath-rooms, and lavatories, and recommend special attention to the trapping of all the sinks, &c. The attendants are in the habit of removing the plugs from the waste-pipes in the baths, a practice which should be discontinued. In No. 3 Bath-room, on the men's side, the odour was very offensive."

SURREY (WANDSWORTH).—One woman died of erysipelas: no remarks as to sewers, ventilation, &c."

SUSSEX.—"Four deaths from erysipelas and six from diarrhoea."

WARWICK.—"There has been no epidemic, but erysipelas was in the winter somewhat prevalent in the neighbourhood, and a few were attacked in the Asylum."

WILTS.—"The overcrowding in both divisions necessitates a certain number of beds being placed in the corridors," &c.

"We understood last year that the improvement of the drainage was under the consideration of the Committee, but nothing has been done in the matter, except that the water-closets are now flushed on a different principle. We are strongly of opinion that the whole system needs investigation, for not only in the laundry, but in many other parts, we found disagreeable smells existing, to some extent caused by a very general escape of gas, but also apparently arising from defective drainage."

".....Erysipelas was epidemic at the latter end of 1875 and the early part of this year, and was fatal in seven instances. It seems to have been of a severe character, and is attributed by Dr. Burman to overcrowding."

"Diarrhoea was also prevalent at various periods, but only fatal in two cases. This points to the necessity of taking immediate steps to place the Asylum in the best sanitary condition, and of revising the present dietary."

WORCESTER.—"The death from typhoid fever was in January last, at which time five other patients were attacked by it. The supposed cause was the bursting of a drain which had been imperfectly laid under the ward where most of the cases occurred. There has been no fresh case since this was remedied."

YORKSHIRE (NORTH RIDING).—"With the exception of some cases of diarrhoea, which were not considered to be of an epidemic character, the general health has been good without any serious interruption."

Three deaths due to diarrhoea. No notice of this taken.

YORKSHIRE (WADSLEY).—"Amongst the females several were suffering from diarrhœa, which has for some time shown itself in both divisions; but it has not been confined to any particular ward, and the immediate cause of the disorder has not hitherto been discovered."

"78 deaths, 69 p.m.'s."

BRISTOL.—"One death, however, resulted from erysipelas; several patients have been attacked by the same disease; and one of the women, whom we found in bed, as well as a nurse, is at present suffering from it. It seems to have been confined to the Female Wards, No. 15 and 16, and Mr. Thompson does not attribute it to any special cause."

"We regret to state that the head female attendant, whose serious illness from typhoid fever was mentioned in the last Report, died shortly after; since that time no fresh case has occurred. The outbreaks of this disease, which have taken place at particular seasons during the last three or four years, were, there is every reason to suppose, caused by the use of water from two sources, to which recourse was necessarily had when the other supplies failed in dry weather."

"By an analysis of the water supply, made in December last, it was shown that the water from these two sources was polluted, and quite unfit for drinking purposes."

HULL.—"For some months diarrhœa has been endemic, 40 cases having occurred in the female division, and four in the male. The excess of cases amongst the women is attributed by Dr. Wallis to overcrowding, and to pollution of the atmosphere in Female Ward 2 and its corridors, from the adjoining privies."

"Although the drainage of the new building appears to be satisfactory, that connected with the old part of the Asylum is said to be unknown, and it seems that no one can say what becomes of the sewage thus received."

NEWCASTLE-UPON-TYNE.—"The deaths, with two exceptions, have been from causes ordinarily prevailing in Asylums. The exceptions referred to were both cases of erysipelas, terminating fatally, in patients affected respectively with general paralysis and senile decay."

"It appears that erysipelas made its appearance in the month of October last, since which time there have been 12 cases among the men and four among the women. The origin of the disorder has not been traced to any special sanitary defect, but, as the result of our enquiries to-day, we recommend that early attention be paid to the better ventilation of the soil-pipes of the water-closets, and also to the ventilation of the drains externally to the building. We learn that the question of altogether excluding the waste steam from the drains is already under the consideration of the Committee."

It will be seen that in 21 asylums erysipelas, typhoid or diarrhœa has prevailed more or less. Of course Dr. Phillimore may have special information on the causation of these diseases, but the majority of medical men, in fact all but himself, so far as I know, agree that they are due to overcrowding, sewage gases, deficient or impure water supply, and like causes. Now what do the above extracts state as to the sanitary condition of the asylums in question? They prove that in 10 county asylums (viz., Bedford, Cambridge, Derby, Devon, Rainhill, Colney Hatch, Oxford, Warwick, Wilts and Worcester), and three borough asylums (viz., Bristol, Hull and Newcastle), the sanitary arrangements were evidently and unquestionably bad. We have still to account for the presence of these evil diseases in eight county asylums (viz., Bucks, Cornwall, Hereford, Hanwell, Wandsworth, Sussex, North Riding, and the South Yorkshire).

BUCKS.—The day-room space in the infirmaries is deficient. Beyond this I cannot obtain any information in recent Blue Books, and Dr. Humphrey makes no mention of the subject in his Annual Report.

CORNWALL.—Dr. Adams cannot account for the occurrence of erysipelas, but suggests overcrowding. This may be the explanation, but I cannot find any

statement to the effect that all the drains, &c., have been examined and found in perfect order.

HEREFORD.—Although this asylum was free, when visited by the Commissioners in 1876, typhoid had re-appeared when they visited it on 18th April, 1877. They say: "Besides the case of enteric fever, another occurred in the male wards, from which the patient recovered. Dr. Chapman is of opinion that leakage from the soil pipes of the water closets in the infirmary and in No. 1 Ward was the probable cause of the disorder, and steps will at once be taken to remedy this defect, by carrying the soil pipes into the drains outside the building. The occurrence of an outbreak of erysipelas two years since, arising probably from the same cause—imperfect sanitary arrangements—points to the great importance of at once carrying out the alteration in all the wards in both divisions, and at the same time securing the effective ventilation of all the drains by carrying larger pipes than those now fixed above the roof of the building."

HANWELL.—No explanation can be obtained of the occurrence of typhoid fever. The drains are stated to be all right. But I would take the liberty of doubting this, as in the report for last year the Medical Superintendent reports: "There has been no disease of either an infectious or contagious character amongst the patients, but three of the female servants, two laundry maids and a nurse, had to be removed to the detached Cottage Hospital—the laundry maids on account of typhoid fever, and the nurse on account of scarlet fever. As these diseases attacked those who were in the habit of going outside the building, the probability is that the complaints were contracted elsewhere."

The manner in which typhoid is almost limited to laundry maids is very suggestive of some local means of contamination by sewer gas.

SURREY (WANDSWORTH).—Extract from Report to Quarter Sessions, dated March, 1877: "Two cases of typhoid fever occurred in the asylum, the origin of which was subsequently traced to the defective state of the drains, permitting an escape of sewer gas into the wards. Further investigation showed the various traps and escape-pipes from water closets and cisterns throughout the building to be faulty in construction and in bad condition."

SUSSEX.—In 1875, two patients died of diarrhoea, and two of erysipelas. In 1876, two died of erysipelas. In the Commissioners' Report, dated 25th November, 1876, six deaths are attributed to diarrhoea, and four to erysipelas, and although they state that "the present sanitary condition of the asylum is quite satisfactory," they make no comment whatever on these deaths, a rather unusual omission. In the report for 1875, the Visitors report that "owing to the presence of iron in the water derived from the asylum well, the mains throughout the building were found to be choked with the red oxide."

As this condition of the pipes and the unusual prevalence of diarrhoea and erysipelas coincide in date, it is possible that these diseases were really due to sewer gas escaping into the building from defective water supply. So far as I can find, the Medical Superintendent does not attempt to explain the origin of the cases now under notice.

YORKSHIRE (NORTH RIDING).—I cannot find in the more recent Blue Books any information as to the drainage of this asylum. Neither can I lay my hands upon any of the annual reports; so I have no information as to the causation of diarrhoea here.

YORKSHIRE (WADSLEY).—Diarrhoea has been endemic for a number of years.

Extract from Visitors' Report for 1877.—"The tendency to diarrhoea among the patients has been less than in former years."

Extract from Commissioners' Report, dated 4th February, 1878.—"We learn from Dr. Mitchell that since the Commissioners' visit in 1877 there have been several appearances of diarrhoea in the female Infirmary, which he attributes to the admission of vitiated air from an adjoining water closet. The ex-

ternal ventilation of all the water closet drains has now been completed, and there is at present no case of diarrhoea."

These extracts clearly show that in the county asylums of Hereford, Wadsworth, South Riding and Wadsley, slow poisoning by sewage gas was going on. We have, therefore, now to deal with only four asylums, viz.:—Bucks, Cornwall, Hanwell and Sussex. In these instances it is impossible to arrive at any definite conclusion for want of sufficient data. Before it could be stated that typhoid, &c., appeared in these asylums from causes other than sewer-contamination, it would be necessary to have clear and conclusive proof that the latter was impossible.

Now to sum up the whole matter. In every asylum about which we possess definite information, in which erysipelas, diarrhoea, or typhoid fever has occurred, we have a distinct history of poisoning by sewer gas. The extracts from official reports prove that there is no foundation in fact for Dr. Phillimore's statement, "that erysipelas has been a fatal and troublesome epidemic in some well-constructed modern asylums." Surely Dr. Phillimore is not ignorant of the very faulty arrangements in some modern asylums for the prevention of poisonous gases finding their way from the drains into the buildings. In some cases things were in such a bad state that it was necessary to remove all the original appliances, and in others their improvement is now being effected. That these statements are true can be shown from official reports, and are besides notorious.

I am quite at a loss to discover any rational motive that Dr. Phillimore could have in publishing the paragraph to which I have drawn attention. Because he does not choose to make post-mortem examinations, why should he try to prevent others from making them? If he could prove his proposition, no more would be made in asylums, unless the medical officers had a desire to answer a charge of manslaughter or murder.

This is the only communication with which I shall trouble you on this subject.

I am, &c.,

T. McDOWALL.

[Copy of letter in "British Medical Journal," 22nd December, 1877.]

POST-MORTEM EXAMINATIONS IN LUNATIC ASYLUMS.

SIR,—The right to perform post-mortem examinations is occupying the attention of the public, the Poor Law staff, and the superintendents of lunatic asylums. I was engaged upon the uncongenial task of making enquiries as to what is the practice in kindred institutions when the public judgment so strongly expressed by Lord Salisbury opportunely came to strengthen the position, justifying my scruples, and further to demonstrate the sensitiveness of the nation upon the subject.

The daily press and the medical are all agreed that unauthorised and indiscriminate necropsies, whether in public or private practice, are not desirable, and that it is entirely at variance with the law to act in the absence of explicit and formal instructions. The editor of the "Journal of Mental Science," in a late number (94), says that "the subject of compulsory post-mortem examinations is a very difficult one, not to say dangerous." He probably referred only to the rights of the deceased or of the relatives; but there is also a professional aspect to the question. I object, as a medical man, to being compelled to pursue one branch of scientific knowledge whilst engaged in another more suited to my taste and inclination. I prefer enquiring into the causes that produce insanity, and promoting the cure—to recording the mischief that has resulted from it. When the question was raised by the Commissioners in Lunacy in 1870, I determined to act with caution, not to assume an aggressive attitude, but confine myself strictly to the duties assigned to me by the law. Mr. Wickham, of the Newcastle Asylum, has clearly shown that, since the publica-

tion of the number of the necropsies performed, a spirit of rivalry has been encouraged, and favourable and unfavourable contrasts have been drawn, according to the zeal displayed in this cause. At that time, I consulted my solicitor, who informed me that I could give no answer to any charge brought against me in this respect by the relatives of a deceased lunatic, unless I could produce some consent or an order from a competent legal authority. Like Mr. Wickham, I applied for permission from the Coroner, and I received the same reply—that he had no power unless he held an inquest; and he added that a case might arise in which he could exercise the power of calling in somebody else. Indeed, in conference with one of the magistrates, the latter did not hesitate to say that, in the abstract, he was not quite sure whether a superintendent was the proper person to undertake such inquiries. The following brief account comprise the several methods of procedure adopted for the most part in English asylums:—

1. In some asylums, where post-mortem examinations are the rule, no consent of the relatives is sought or obtained, the superintendent claims the right of acting at his own discretion.

2. In several others, arrangements are made, whilst the patient is alive, for conducting his post-mortem examination. In that event, consent thereto is inferred, unless a notice in writing to the contrary be lodged with some official at the asylum.

3. In others, a notice is sent after the death to the relative that a post-mortem examination will be made or is necessary, and, unless an answer forbidding it be sent in the briefest possible period allowed, the instruction is carried out.

Mr. Wickham's experience is adverse to this, and he is not the only one who has been threatened with violent measures. Moreover, it confounds non-assent with consent.

4. In some lunatic asylums, expressed consent is obtained verbally; there can be no objection to this, provided there is no undue pressure.

5. My practice is to send the following addendum to the notice of death to the relative:—"If the relative or other person having due authority will send a written sanction for a post-mortem examination to be made, the superintendent will be willing to conduct the same, time permitting." In cases of peculiar interest, a personal interview, with a view to persuasion, is solicited.

It appears to me to be of doubtful propriety to force upon the poor what we should shrink from doing with the rich. Every Englishman has a right to be buried unmutilated and decently covered. The infliction of three thousand seven hundred and three post-mortem examinations in one year, that number dying in county asylums, is needless, and a waste of power. The system is calculated to excite suspicion of neglect during life, and of ignorance of the cause of death.

My remarks apply to asylums where the officers are salaried out of the public rates, and bound to uphold the law. In hospital and charitable institutions not under the magistracy, where the patient seeks charity, and the friends in turn ought to be charitable, the case is somewhat different. Mr. Wickham considers that an inquest ought to be held in every case. This would satisfy the ethical conditions of the question, but might not be acceptable to the ratepayers, on account of the expense.

In conclusion, I am satisfied that a post-mortem examination was never contemplated at all in any one of the Lunacy Acts as a function of the superintendent. Any other than a medical man may be appointed as such by the Visitors and Secretary of State; and nothing is more likely to damage the authority now enjoyed by the medical officer than a demand for special professional privileges.

I am, &c.,

WM. P. PHILLIMORE, M.B., Superintendent.
Nottingham County Asylum, December 10th, 1877.

DR. HARRINGTON TUKE'S EVIDENCE BEFORE THE DILLWYN
COMMITTEE.

The following correspondence has taken place in reference to the article on Lunacy Law in our January number :—

24, Essex Street, Strand,
London, W.C.,
23rd January, 1878.

GENTLEMEN,—Dr. Tuke has had his attention drawn to the last number of the “Journal of Mental Science.” He is far from wishing to curb public criticism of his views, sentiments, and acts, provided it is done honestly, but he does not consider your allusions to him in folio 485 of the number alluded to are either true or fair, containing, as they do, statements which are calculated to create a most unjust prejudice against himself and his establishment. With regard to your criticism of what you allude to as a “grave charge,” a reference to the reports will show that the circumstances you refer to are quoted in a different report—viz., in 1877—to that quoted by Dr. Tuke, and hence the test of Dr. Tuke’s candour and accuracy is unjust and unfounded.

With regard to your allusion to an unfortunate suicide at Dr. Tuke’s establishment, as establishing a “record of mismanagement greater than anything to be found in the Commissioners’ entries regarding the Hospitals,” this Dr. Tuke considers as an unfair aspersion upon himself and his establishment.

As you have all the materials before you for ascertaining the inaccurate statements to which we have alluded, we must ask you to publish such a retraction of the serious comments you have thought proper to make as will set Dr. Tuke’s conduct and management right in the eyes of those whose good opinion he most prizes.

We are, Gentlemen,
Your obedient Servants,
GEO. H. K. & G. M. FISHER.

To the Editors of the
“Journal of Mental Science,”
9, Hanover Square.

Royal Edinburgh Asylum for the Insane,
Edinburgh,
February 6th, 1878.

GENTLEMEN,—In reply to your letter of 23rd January last, we beg leave to repudiate emphatically the charge made by you on behalf of Dr. Harrington Tuke that the criticism in the January number of the Journal in regard to that gentleman’s published utterances was not done “honestly,” or was other than “true” or “fair.” At the same time, if we have unintentionally admitted any errors as to matters of fact into the article of which Dr. Harrington Tuke complains, we shall be happy to publish a correction in our April number on being informed what they are.

The grave charge which Dr. Tuke made against the whole of the Registered Hospitals consists of two counts—First, he says sweepingly, without making even a single exception, that “The last report of the Commissioners contains records of mismanagement and complaints against these Hospitals.” That is the grave and damaging charge Dr. Tuke thought it right to make against Hospitals that are public institutions in great part of a charitable nature, not conducted with a view to profit but with sole reference to the welfare of their unfortunate inmates, and which are justly considered the greatest boons to the insane in this country.

The last report of the Commissioners—that for 1876—was referred to in the article to show that Dr. Tuke’s statement was unfair to these Hospitals.

You inform us in your letter that Dr. Tuke was quoting a different report, without, however, stating which report that was. If it be the report for 1875—and the writer of the article assures us that such a supposition never occurred to his mind until the receipt of your letter—we still adhere to the opinion that Dr. Tuke's grave charge was not supported by facts. In that very report the Commissioners in Lunacy expressly state—"Generally speaking, the reports will be found favourable to the management of the Registered Hospitals during the past year."

In the report for 1874 they say again that "the general condition of these institutions is quite satisfactory."

In the report for 1873, again, they say—"The Hospitals continue, in general, as our entries will show, to deserve favourable notice."

The discrepancy as to which was "the last report" is the only ground you have for saying that "the test of Dr. Tuke's candour and accuracy is unjust and unfounded." You do not venture to deny that Dr. Tuke's statements, tested by the report of 1876, are fairly criticised, and the foregoing extracts will show you how they would stand if tested by previous reports.

In order, however, that there may be literal accuracy in this matter, we shall, on your informing us definitely to which report Dr. Tuke intended to refer, be willing to explain in our next number that the writer of the article had mistaken the report which Dr. Tuke had in mind; that he regrets such a mistake should have occurred; and then test the accuracy and justice of that gentleman's observations by the report referred to.

The "Journal of Mental Science" would fail in its duty to the members of the Medico-Psychological Association, and to the public, were it not to defend these great Hospitals, provided by the charity of the nation, from charges calculated to do them and their unfortunate inmates great harm in the eyes of the public, and seriously to disquiet the minds of those who have relations or friends in them.

The second count of Dr. Tuke's grave charge was, in our opinion, still more serious, and cannot be even mitigated by any possible misunderstanding as to the dates of reports. When Dr. Tuke thought proper to state about a large body of his professional brethren, whose reputation he must admit to be as important to them as his own is to himself, that "not one" of them "has any repute for treatment," his words were calculated to do them a grave injury, and our Journal would have utterly failed in its duty had it not condemned a statement which is as amazing as it is unjust. As to our remarks on this charge, we have not only no "retractation" to make, but we feel that our article was far from being as severe as a charge of such a nature warranted.

With regard to the passing reference to the pages of the Commissioners' report, in which they give an account of a suicide in Dr. Tuke's establishment—namely, that which had occurred before his evidence was given (and we beg leave particularly to direct your attention to the fact that the words in your letter within quotation marks are not taken from the pages of our Journal)—we are authorised by the writer of the article to state that nothing but a strong feeling that it was his duty to defend effectually institutions of great public usefulness would have made him refer to this, and show that Dr. Tuke's own establishment was itself liable to the same unfortunate occurrences as those which apparently he makes use of to throw discredit upon the Hospitals. If Dr. Tuke does not found a charge of "mismanagement" against the Hospitals on such occurrences, it is strange that he should now ask us for a "retractation" of the cursory allusion to a case which happened within his own establishment, and the account of which is contained in a public report.

But as it is a matter of opinion, after all, whether any fact establishes "mismanagement" in an asylum, public or private, we shall be most willing to print the whole of the facts in regard to the suicides, &c., in the public Hospitals and in Manor House Private Asylum from the reports of the Commissioners in Lunacy in our next number, should Dr. Harrington Tuke wish it.

We propose to print your letter and this reply in the April number of our Journal, a course to which, we presume, your client can have no objection.

I am, Gentlemen,

Your obedient Servant,

T. S. CLOUSTON,

On behalf of the Editors of the

"Journal of Mental Science."

Messrs. Geo. H. K. & G. M. Fisher.

24, Essex Street, Strand,

London, W.C.,

March 19th, 1878.

GENTLEMEN,—We have received with surprise and regret your answer to our letter—regret that you do not at once send a suitable apology for the flagrant mistake you have obviously committed, surprise that you should still affect not to know which report it was Dr. Tuke quoted from. We will in a few words prove that you must know this perfectly well.

Dr. Tuke was called before the Select Committee on the 21st of April, 1877; the Senior Editor of the Journal, Dr. Maudsley, gave evidence on the 27th of the same month, and was subsequently recalled, at his own request. The evidence must be familiar to him, and he must know that in the review we complain of the absurd error has been made of comparing Dr. Tuke's statements from the Blue Book of 1876, in April, with the facts and figures of a Blue Book published in August, 1877—four months afterwards—and editorially reviewed in the Journal in 1878!

The reviewer states, and your letter repeats, these words:—"Dr. Tuke says that 'the last report of the Commissioners in Lunacy contains records of mismanagement and complaints against the Registered Hospitals. That is the grave and damaging charge Dr. Tuke thought it right to make.'" The reviewer adds:—"This is indeed a grave charge; if not true, Dr. Tuke should not have made it. In simple justice to these gentlemen and their institutions, we must again turn to the report to which Dr. Tuke refers. We find nothing but praise of their condition and management; the only statement in the nature of complaints are—" Here follow some trivial matters which show that the reviewer is quoting the report published in August last, which has nothing to do with the evidence given in the preceding April.

You say, again, in your letter that you still adhere to your opinion that "Dr. Tuke's grave charge was not supported by facts," and you attempt to prove this by quoting from the report Dr. Tuke and the Committee really had before them—"in that very report the Commissioners in Lunacy expressly state that generally speaking the report will be found favourable to the management of the Registered Hospitals during the past year."

This would seem to decide the case against Dr. Tuke; but it seems almost incredible that gentlemen of your position should so unfairly try to damage our client's evidence. You have studiously omitted half of the sentence, thus giving "the principal exception," &c., which is precisely the case referred to by Dr. Tuke in his statement to the Committee, and if it had been mentioned, would have again identified the report.

On turning to the 30th report, we find during 1875, in the Registered Hospitals, that the death by "violence" was consequent upon an attempt to put a patient into a straight waistcoat; that a Registered Hospital physician has treated a patient with acute mania in a farm house, and is cautioned for doing so without certificates; that there are three cases of suicide; that a patient is reported to have died whose life might have been saved had he been seen by any medical man, and this in "consequence of the defective nature of the arrangements and management of the Hospital." There are many cases of mechanical restraint and seclusion. As to the latter, a case is recorded by the Commissioners of a patient in a Registered Hospital who, left alone in a padded

room, gorged out his eyes with his own fingers ! It would seem that Dr. Tuke avoided sensational and damaging statements, and made no charge whatever ; he spoke with much forbearance as to one fact only ; he mentioned no name. Dr. Tuke did not take advantage of an exceptional year to try and damage professional men for whom he has high esteem. He desires us to say that he does not wish, as you offer, that the details of these distressing cases should be republished in the Journal. Whether you will publish the sad accident in his own institution is indifferent to him, but on this subject we have some serious remarks to make.

Your article insinuates that the suicide occurring at Chiswick arose from mismanagement on Dr. Tuke's part. You say it occupies a page and a half of the Blue Book ; you do not say that the page and a half is taken up by the proceedings in regard to the attendant "whose wilful disobedience" of Dr. Tuke's orders led to the melancholy event. You must by this omission intend to injure Dr. Tuke and his asylum. The whole tenor of the article evinces the same desire. Thus you sneer at, and "put on record the fact that Dr. Tuke had ordered restraint in a particular case for three nights," as if it were his common practice ; while you knew that Dr. Tuke was a son-in-law, pupil, and executor of the late Dr. Conolly, and an ardent supporter of his views as to non-restraint. Again, you say, and significantly add, "Comment is unnecessary." That the cures at Manor House in 1876 were only 12 per cent. A reference we have made to the official records of that establishment show that during the thirty years of Dr. Tuke's management the cures have amounted to 40 per cent. per annum. This, again, must be to injure Dr. Tuke's practice. Your minor attack upon Dr. Tuke he leaves to the judgment of his professional brethren, who will, he trusts, consult the whole text of Dr. Tuke's evidence in the Blue Book, and not trust to your extracts.

We again ask for an apology, and are, Gentlemen,

Your obedient servants,

G. H. K. & G. M. FISHER.

(Duplicate sent to Dr. Maudsley.)

Dr. Clouston,
Royal Asylum for the Insane,
Edinburgh.

Tipperlinn House, Morningside,
Edinburgh, 9th April, 1878.

GENTLEMEN,—As one of the Editors of the "Journal of Mental Science," I am in receipt of your letter of the 19th ult. In it you assume that because Dr. Maudsley gave evidence before the Select Committee of the House of Commons he must have been familiar with Dr. Harrington Tuke's evidence, and you conclude from that assumption that the mistake of the Blue Book of 1876 for the one of 1875 was not made in good faith. This makes it incumbent upon me to state—what my initials to the article sufficiently indicated—that it was written by me ; that it was not seen by Dr. Maudsley, who had nothing whatever to do with it, until it was in print in the paged proofs, and that I appended my initials in order to assume responsibility for the opinions and recommendations in it, some of which are directly opposed to his opinions as given in evidence before the Select Committee.

With reference to Dr. Maudsley's supposed familiarity with Dr. Tuke's evidence, I have received the following letter :—

"DEAR DR. CLOUSTON,—Messrs. Fisher are quite mistaken in supposing that I am familiar with Dr. Tuke's evidence. I was not present at any meeting of the Select Committee except when I gave evidence before it, so that I did not hear a word of his evidence ; nor have I, to the best of my knowledge, read a line of it in the Blue Book. All I know of it is confined to the extracts from it in your article, and to a brief notice of it in some evening newspaper at the

time. In reading your article, I had not the least suspicion that you were not referring to the same report as Dr. Tuke had done.

"Messrs Fisher have been betrayed into making an unbecoming imputation, which has no other foundation than baseless speculations.

"Yours very truly,

"H. MAUDSLEY.

"9, Hanover Square,

"March 24th, 1878."

While adhering to the substance of the remarks I made about Dr. Tuke's evidence, and maintaining them to be fair and honest criticism, I gladly express our regret that I should have unintentionally mistaken the report, which had been the last report for months before I wrote in November, for that which was the last report when Dr. Tuke gave his evidence, and that I should have stated this in my article, though that statement was made in perfect good faith at the time.

But while I most willingly do this, I maintain that a perusal of Dr. Tuke's "last report" abundantly justifies my criticisms, and does not justify his charges.

There are in England sixteen Registered Hospitals, which contained 2,796 patients at the end of 1875. Dr. Tuke's words in regard to them were:—"The last report of the Commissioners of Lunacy contains records of mismanagement and complaints against these Hospitals." I called this a "grave charge," and I showed that the report of 1876 contained "almost nothing but praise of their condition and management." You do not question that this is the truth, but you say that that report has "nothing to do with the evidence (of Dr. Tuke, given in the preceding April)." I must beg leave to differ from you in this very decidedly. I am confident that few persons interested in the work of great charitable institutions will consider that general statements about them of an injurious kind, made in April, 1877, should not be tested by authoritative reports about them for 1876, or that the latter have "nothing to do" with the former. Even if their condition had been as bad as Dr. Tuke describes them in 1875, he should have been glad to hear that they had so decidedly improved in 1876.

You complain that in quoting the favourable report, which sums up the Commissioners' general opinion of the Hospitals in 1875, we omitted the "principal exception" mentioned by them; and you then make the astounding admission on the part of your client that his "statement to the Committee"—I presume his sweeping general charge against all the Hospitals of "mismanagement and complaints"—was based on this one case. I had thought the exception so insignificant that it simply proved the rule, and therefore did not think it worth while to refer to it. Dr. Tuke, according to your letter, had thought it so important that he told a Committee of the House of Commons engaged in a serious enquiry that its existence condemned sixteen great institutions containing nearly three thousand patients. I am willing to admit at once that controversy between persons who reach such opposite conclusions from the same facts is useless, and I should at once have concluded this letter had you not—perhaps naturally—attempted to strengthen your client's one case by others you have extracted from the report. Even Dr. Tuke's all important exception, when looked at, turns out to be not one Hospital standing out as badly managed among the sixteen, but one exception in the general good management of one of them in regard to the "class of ordinary attendants there employed on the male side of the Hospital, and with their disregard of the regulations." In your letter you excuse the suicide in Dr. Tuke's Private Asylum on the ground of an attendant's disobedience to orders; what in his own case is made the excuse for an "unfortunate" occurrence appears to become in his mouth before the Committee the ground for an accusation of general mismanagement, not against the Hospital alone in which it occurred, but against the whole.

You make reference to five occurrences and to one general fact as bearing out Dr. Tuke's imputation. I shall now consider these *seriatim*.

1. You say that a "death by violence was consequent upon an attempt to put a patient into a straight waistcoat." You studiously omit to refer to the medical evidence and the finding of the jury that this was a "death from serous apoplexy," adding their opinion that an attendant had used "some short time previously undue violence."

2. You state that a "Registered Hospital physician has treated a patient with acute mania in a farm house, and is cautioned for doing so without certificates." You do not explain what that has to do with the management of the Hospital; it appears to us to have no more bearing upon the question of management than Dr. Tuke's treatment of a patient in a private house would have upon the management of his Asylum. That you should refer to such a case appears simply to show that you have few relevant facts to go on.

3. You state that there were three cases of suicide, but you studiously omit to say that in two of them the jury "attributed no blame to the officers of the institution;" while in the third case, where no mention is made of the verdict of the jury, the Commissioners state that the accident was due to the carelessness of an attendant—dismissed in consequence—who left the deceased in possession of a handkerchief over night. Were suicides a satisfactory test of management—which, however, I am far from saying they are—I find that during the past ten years the Registered Hospitals, with 8,957 admissions, have had 22, while Dr. Tuke, with 143 admissions at Manor House, has had two, a proportion about six times as great.

4. You state that a patient is reported to have died whose life might have been saved had he been seen by any medical man, and this in "consequence of the defective nature of the arrangements and management of the Hospital." You have studiously omitted to quote the latter part of the sentence, which would have shown that this did not refer to any general defective management, but to the single fact that no definite arrangements had been made to provide for such an emergency as the illness of the Medical Superintendent. The patient went to bed with "what was considered a slight cold," got somewhat worse through the night, though this was not reported to the Medical Superintendent till 10.15 a.m. next day. He was too ill himself to see the patient, but sent at once for one of the Consulting Physicians. "This gentleman was not immediately to be found, and, as events turned out, no medical assistance was obtained till two in the afternoon." "Such remedies as appeared proper were used, and at three p.m. the other Visiting Physician also saw the patient." About this case the Commissioners express the medical theory that "had the patient been seen on the previous evening by any medical man the urgency of the symptoms might have been recognised in time to save his life."

5. You state that "there are many cases of mechanical restraint and seclusion." As regards the latter, I have yet to learn that its judicious use under medical authority is a proof of Asylum mismanagement, and there is not a single complaint that in any of the Hospitals it was used too frequently or unjustifiably in any single case. And as regards mechanical restraint, it seems scarcely credible that a gentleman who has been proved by the Commissioners' Reports to resort to its use without surgical reasons in the treatment of his patients should now direct you to refer to its use as a proof of mismanagement in the eight instances where it was employed in two Hospitals. In the other instances (in four Hospitals) it was used for *surgical* reasons, where it is held by all authorities in lunacy to be necessary. But the best way to show how the Commissioners mention restraint and seclusion is to quote what they say about them in some of the Hospitals where they were employed.

Barnwood House, Gloucester.

"We have examined the registers, and find no entry of any case of mechanical restraint. As regards seclusion, it appears to have been restricted to the females, and to three cases only."

Lincoln Lunatic Hospital.

"There was no one restrained or in seclusion : no instance of either is reported since the last visit."

Bethel Hospital, Norwich.

"No person is restrained to-day, except the sufferer from burns, and he is so dealt with for surgical reasons. Seclusion has been used in no instance."

Bethlehem Hospital.

"There appears to have been no case of restraint since the last visit, but nine men and twelve women have been secluded" (out of 250 patients).

York Lunatic Hospital.

"The only case of instrumental restraint has been that of a man who had his hands tied for eight days for surgical reasons. Seclusion has been very sparingly used."

The Retreat, York.

"The only record of seclusion is in the case of one man for the space of half an hour, and there is none of any mechanical restraint."

Wonford House, Exeter.

"Two other ladies have been secluded, one on three, the second on two occasions. There is no entry of any resort to mechanical restraint."

6, As regards the case of the gentleman who, in the padded room and alone, gouged out his eyes with his own fingers, the Commissioners do not say that it was a preventible accident, or that any one was to blame; and as regards the general management of the Hospital, instead of finding fault with it, they state "the general arrangements for their (the patients') care and treatment seem excellent."

Having by these references to the report to which Dr. Tuke referred shown the real extent and nature of the occurrences alluded to by him and yourselves, the amount of his forbearance when he avoided "sensational and damaging statements, and made no charge whatever," and generously forbore to "damage professional men for whom he has high esteem," can be best estimated by the gentlemen whose professional abilities and success he so graphically described.

I shall now, from the same Blue Book where Dr. Tuke found nothing apparently but mismanagement and complaints, quote statements from the Commissioners' reports on each of the sixteen Hospitals, showing their general condition or that of their patients :—

Manchester Lunatic Hospital, Cheadle.

"There appears to be very general content and good order."

Wonford House, Exeter.

"The health of the inmates appears to be very fair." "The dress of the patients of both sexes was not wanting in neatness. The rooms were in good order."

Barnwood House, Gloucester.

"We" "have a very good report to make, both as regards the good order and cleanliness of the wards and the condition of the patients."

Liverpool Lunatic Hospital.

"The personal appearance of the patients in regard to dress and cleanliness was fairly satisfactory." "The wards were throughout in order at the time of our visit." "The general health is good."

Royal Albert Asylum, Lancaster.

"Our visit has satisfied us of the care and kindness the inmates received, and of the skill and attention bestowed upon their training and education."

Lincoln Lunatic Hospital.

"Personally, the patients in both divisions were in a satisfactory state." "We had no complaints of the attendants, nor indeed with reference to any other matter."

St. Luke's Hospital.

"Although every opportunity for complaints was afforded, no patient made any charge of harsh or rough usage."

Bethel Hospital, Norwich.

"Great order and quiet prevailed among the patients during our stay in the hospital, and no single complaint was addressed to us by any inmate of either sex. The general arrangements seem judicious." "The hospital is a real charity, and doubtless supplies a great want."

Northampton Lunatic Asylum.

"No patient appeared to us to have a real grievance, and the general arrangements for their care and treatment seem excellent."

Nottingham Lunatic Asylum.

"As on former occasions we have an excellent account to give of the condition and treatment of the patients."

Warneford Hospital, near Oxford.

"We have seen them (the patients) all to-day, and have no special remarks to make with reference to their mental or bodily condition."

Coton Hill Institution, Stafford.

"We can, on the whole, report favourably of their (the patients') treatment and condition."

Bethlehem Hospital.

"We have again pleasure in reporting that the Hospital is in excellent order, and its state very creditable to those engaged in its management."

Earlswood Idiot Asylum.

"It is with much pleasure that we are again able to record our opinion of the satisfactory state of the Asylum, and of the zeal and ability that mark its management and superintendence."

York Lunatic Hospital.

"We have inspected this Hospital, and seen all the patients to-day. They were, on the whole, in a satisfactory state."

The Retreat, York.

"We have seen (the patients) all, and found them quiet and orderly. Some few requests were made to us for discharge, but no complaint respecting the treatment received."

As if those favourable opinions of the Commissioners in regard to each Hospital separately might not be held sufficient to stamp them emphatically enough with their approval, they say, "We have so high an opinion of such institutions as this, that we again take leave to press upon the consideration of the Committee (of the Nottingham Hospital) the question of the extension of the present accommodation."

A perusal of this evidence, which I hold to be absolutely conclusive as to the general good condition and management of these excellent establishments, shows to any mind free from prejudice and capable of estimating the facts, on what small matters Dr. Tuke built his grave and general charges, and how likely to be misleading and prejudicial his statements are.

The facts which you mention as the results of your inquiries into Dr. Tuke's relations to the late Dr. Conolly may be of interest to his friends, though some of

them are new to me, but I fail to see what relevancy they have to the subject of your letter, much less how they can be held to justify or excuse in any way a mode of treatment which Dr. Conolly would have earnestly and indignantly repudiated. He said, "No fallacy can be greater than that of imagining what is called a *moderate* use of mechanical restraint to be consistent with a general plan of treatment in all other respects complete, unobjectionable, and humane. The abolition must be *absolute*, or it cannot be efficient." "In a well-regulated Asylum, such modes of restraint are *never* thought excusable." "Restraint and *neglect* may be considered as synonymous." "There is *no* Asylum in the world in which *all* mechanical restraints may not be abolished, not only with perfect safety, but with incalculable advantage."

I am gratified that you do not reiterate nor affect to support Dr. Tuke's statements about the medical men connected with the Registered Hospitals having no repute for treatment or having never come to the front, but I think it would have been a more handsome proceeding had he withdrawn them.

I do not for a moment admit your interpretation of the spirit and motive of my criticisms, which were made not for the purpose of injuring Dr. Tuke, but in the discharge of a public duty as the Editor of a Medical Journal in defence of valuable Medical and Philanthropic public institutions, which I considered had been undeservedly stigmatized, and about whose Medical Officers statements had been made most offensive to them. I must also enter my protest against the theory that the proprietor of a Private Asylum who has made charges against public Hospitals and their Physicians should, when his charges are met by fair and honest comparison, founded on public reports, recklessly impute bad motives.

You will probably agree that there is not much use in prolonging this correspondence, but should you deem proper to do so, you will please to communicate through my agent, Mr. John A. Traill, W.S., 88, George street, Edinburgh.

I propose to publish, along with the former correspondence, your letter and this reply.

I am, Gentlemen,

Your obedient servant,

T. S. CLOUSTON.

INTERNATIONAL PSYCHOLOGICAL CONGRESS IN PARIS, ON THE 5TH OF AUGUST, 1878.

MEDICO-PSYCHOLOGICAL SOCIETY OF PARIS.

Paris, 1st June, 1878.

Resolutions and Programme of the International Psychological Congress.

The Committee of Organisation, composed of Drs. Baillarger (President), Blanche, Dumesnil, J. Falret, Lasègue, Lunier, Legrand du Saulle, Motet, Ritti, have framed the following resolutions and programme:—

Resolution I.—That an International Congress on Mental Medicine will be opened at Paris on August 5th, 1878, under the auspices of the Medico-Psychological Society.

Resolution II.—That the Congress, which will be of an exclusively scientific character, will extend over eight days.

Resolution III.—That the Congress will be composed of the original and ordinary national and foreign members.

Original members are the titled and honorary members of the Medico-Psychological Society, whose subscription is 25 francs.

Ordinary members are the Medical Men, the Directors of Foreign and National Asylums, all persons interested in mental diseases, who have sent their subscription to the General Secretary of the Medico-Psychological Society (Dr. Motet, 161, Rue de Charonne, Paris).

Subscription 10 francs.

Resolution IV.—That such Members of Congress will alone have the right to take part in the discussions.

Resolution V.—That the work of the Congress will be:—*a.* Communications on questions proposed by the Committee. *b.* Communications on subjects of foreign interest on the programme relative to Mental Pathology.

These communications will be —

1. The questions of general interest on the programme will be discussed at the General Meetings held on the 5th, 7th, and 9th August.

2. Subjects of foreign interest will be discussed at the intermediate Meetings on the 6th, 8th and 10th August.

Resolution VI.—The Committee has arranged the following programme:—

a. The administration of asylums, their legislation and statistics.

Subject of Debate—On what steps should be taken regarding Criminal Lunatics.

b. Mental and Nervous Pathology.

Subject of Debate—On the Clinical Varieties of General Paralysis.

c. Medical Jurisprudence.

Subject of Debate—On Impulsive and Transient Insanity, from the Medico-Legal point of view of Insanity.

Resolution VII.—Members of Congress, who desire to make any communication on the above or on any other subjects are requested to address their contributions either in whole or part to the General Secretary, at the latest on the 15th July. The Committee will decide on the suitability of the contributions, and the order in which they shall be considered.

No communication to exceed 20 minutes in the reading.

Resolution VIII.—Meetings will be held daily, from 4 to 6 o'clock; each question on the programme to occupy only one general meeting; communications on foreign subjects on the programme will be taken up at the intermediate meetings, and in the order arranged by the Committee.

Resolution IX.—At the first meeting the Congress will nominate an Acting Committee, which will be composed of a President, Vice-President, General Secretary, and the Secretaries of Sections.

Resolution X.—When the Congress is closed, the Committee of Organisation will resume its duties, and proceed to the publication of the proceedings of the Congress.

Resolution XI.—All the papers read at the Congress will be placed, after each meeting, in the hands of the General Secretary. They are to be the property of the Congress.

Resolution XII.—Scientific excursions will be made during the Congress to the Asylums for the Insane in the Department of the Seine, and also the Asylums for the Insane in the Department of the Lower Seine.

In the name of the Committee,

The President,

BAILLARGER.

The General Secretary,

A. MOTET.

ANNUAL MEETING OF THE MEDICO-PSYCHOLOGICAL ASSOCIATION, 1878.

The Thirty-third Annual General Meeting will be held in the Royal College of Physicians, Pall Mall, London (by permission of the President and Fellows), on Friday, July 26th, 1878, under the Presidency of J. Crichton Browne, M.D., F.R.C.S.E., Lord Chancellor's Visitor in Lunacy.

THE JOURNAL OF MENTAL SCIENCE.

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Vol. XXIV.

PART 1.—ORIGINAL ARTICLES.

Presidential Address, delivered at the Royal College of Physicians, London, on Friday, July 26th, 1878. By J. CRICHTON-BROWNE, M.D., F.R.S.E., Lord Chancellor's Visitor.

GENTLEMEN,—On taking formal possession of this chair, to which your generosity has called me, which confers honour on its occupant because it has been tenanted by a succession of able and distinguished men, and which is to me especially venerable, because my father once filled it, I shall, I believe, be conforming to excellent precedents if I begin by passing in rapid review before you the principal occurrences of the last twelvemonths, affecting the interests of the Medico-Psychological Association.

And in doing this I have to remind you in the first place, that since our last annual gathering one of our distinguished honorary members and a former occupant of this chair, has been removed by death. I allude to Sir James Coxe, Commissioner in Lunacy for Scotland, who presided over the meeting of this Association in 1872 with great dignity and urbanity, who delivered to it a thoughtful address, and who entertained it in a manner not unworthy of the hospitable capital of a hospitable country. The copyright of a life lasts for more than seven years after it is finished, and until that has expired—until all private privileges are extinguished and petty prejudices have passed away—it is too soon to estimate its real and permanent value. Only then can we say whether the work accomplished in it was distinctive and truly noble, or trivial and base, or of that useful and indispensable, but common sort that is performed by the bulk of mankind. The function of criticism, however, is not deferred until the time for full and just insight arrives. Even while tears are falling its voice is heard appraising the worth of the scarce-

ended drama, and striving, as best it may, in haste and perplexity, to anticipate the judgment of a calm and lucid future. This immediate and partial biographical review is all that is yet possible to us in the case of Sir James Coxe, and I think its unmistakable purport is, that he was an able and conscientious man, who performed many useful labours in the course of an eminently wholesome and prosperous existence, and who has left enduring traces of himself on that department of public affairs with which he was connected.

From the commencement of his career, Sir James Coxe interested himself in insanity. During the earlier stages of his professional training, he enjoyed no opportunities of coming into contact with the cloistered insane, nor of observing the modes of treatment then resorted to, as lunatic asylums were not in those days open to students, and were unprovided with medical assistants, but this disadvantage was, to a great extent, compensated by his having acquired from his relatives, George and Andrew Combe, a thorough knowledge of phrenology, which—not then fallen on evil days of charlatanry, and into the evil companionship of mesmerism—encouraged the accurate observation of mental states, accentuated the relations subsisting between these and states of the nervous system, and had even some curious glimpses of foresight into the revelations of modern physiology. He saw the phrenological method of inquiry applied in cases of insanity and of peculiar turpitude in the communities of lunatics and criminals that he visited during a long sojourn on the Continent, and the influence of the information thus obtained, co-operating with the natural bent of a comprehensive but unimaginative mind, may be discerned in all his subsequent public and official acts. He was more a legist than a physician. He was a statistician rather than a scientist. He preferred his own social panacea to all the powers of therapeutics.

It is not for me to express here any opinion as to the projects which were foreshadowed and developed in the Reports of the Scotch Board of Lunacy, for which Sir James Coxe was mainly responsible; but this I may say, that however much we may differ from the author of these suggestions as to their practicability and the benefits likely to accrue from them, we are bound to accept them as the expressions of a vigorous and straightforward intellect, and as dictated alike by sympathy with the mentally afflicted, and a patriotic regard for the well-being of the community at large. It is

incontestible that a great improvement has taken place in the condition of the insane in Scotland, since the Report of the Royal Commission of 1856-57—of which Sir James Coxe was an active member, and for his services on which he received the honour of knighthood—disclosed abuses in some private asylums and in the homes of single cases of a very flagrant character. And whatever improvement has been secured must be ascribed, to a considerable degree, to his exertions. His name will be chiefly associated with the system of boarding-out demented and docile patients, which he so persistently defended, with the creation of lunatic wards, or small simply constructed asylums in connection with workhouses, and with the arrangements for the admission of voluntary patients, and of urgent cases on a single certificate of emergency into asylums. And as long as those who came into actual contact with him survive, his name will also be associated with some pleasant personal traits. Under a somewhat stolid exterior, and an almost bashful demeanour, there was in Sir James Coxe a large fund of mother wit, from which largesses of humour and irony were bountifully distributed amongst his friends. His modern Attic salt will long retain its savour, and be potent to call up a reminiscent smile.

Almost simultaneously with the death of Sir James Coxe, occurred that of Dr. Gardiner Hill, who took an early, and earnest part in the humane movement for the abolition of mechanical restraint in the management of the insane. While still rich in the plasticity of youth, his experience in the Lincoln Asylum impressed on him the then unfashionable belief that strait-waistcoats are not essential elements in the paraphernalia of an asylum, and he had the courage to place himself in the front of what proved a successful revolt against ancient usage, and senseless repression. For the courage which he thus displayed, his name is deserving of respectful remembrance.

While no other gaps in our ranks, beyond those just mentioned, have to be deplored, we have to note the withdrawal from the more active duties of official life, of one who has long commanded confidence and esteem as a Commissioner in Lunacy. I trust the day is far distant when there may be propriety in pronouncing an eulogium upon Mr. Wilkes, but I think this opportunity should not be lost of assuring him that he carries with him into his comparative retirement the high regard and good wishes of those who have been, per-

haps, the most competent critics of his public career. His gifts and attainments have enabled him to do the State some service in his time, not only as a Commissioner in England for a quarter of a century, but as a special Royal Commissioner in Ireland, and as the originator of the Coton Hill Asylum, and I think I may safely assert that had his lot been cast in almost any department of the public service, other than that in which he has so assiduously toiled, his merits would have received some titular acknowledgment.

To name the successor of Mr. Wilkes at the Board of Lunacy, is to compliment the discernment of this Association, which five years ago appointed Dr. Rhys Williams to one of its most important and onerous offices, in which his tact and affability have been abundantly shown forth. His promotion to the elevated position which he now occupies, and for which by experience and temperament he is well fitted, has given wide-spread satisfaction, which you have to-day reflected by electing him an honorary member of your body.

Turning from personal to public events, as affecting this Association, I have to remark that the most momentous of these, happening in the past year, has been the publication of the Report of the Select Committee of the House of Commons on the Lunacy Law, which procured during last Session of Parliament so copious and variegated a mass of evidence. And to every member of this Association, who has any pride in his calling, the character of that Report must be a subject of congratulation. After a protracted inquiry and the freest reception of evidence, after patient sifting of conflicting statements and mature deliberation, the Committee conclude that the allegations of *mala fides*, or of the serious abuses brought before them, were not substantiated. The constitution of the committee, and the careful way in which their labours were conducted, ought to give great weight to their verdict, which really amounts to this, that the security afforded against violations of personal liberty by our present lunacy law is practically complete. True the Committee allege that the present system is not free from risks, and suggest some additional safeguards, but the significant fact remains that they did not find out and establish a single case of wrongous deprivation of liberty. From 1859 to 1875, 185,000 persons were shut up in Lunatic Asylums in England and Wales, and it is certainly remarkable that not one of them should have come forward to tell a plain, unvarnished, and trustworthy tale of kidnapping and false imprisonment. Innocent persons are

occasionally convicted of crime, and it might well be, without grave discredit to our lunacy law, that sane persons were occasionally mistaken for lunatics; especially when the boundary line between soundness and unsoundness of mind is so ill defined. It seems, however, that those charged with the administration of the law have kept well within this boundary line; and, on the whole, it is questionable whether, where a human instrumentality is concerned, a nearer approach to perfection than that which our existing lunacy law offers with reference to personal liberty is to be attained, and whether further precautions against risks, which no one runs, would not, in obviating problematic dangers, introduce some very positive disadvantages.

The limited nature of the reference made to the Committee prevented them from dealing in their Report with the multifarious topics, not directly connected with personal liberty, which were brought under their notice by a cloud of witnesses. Although these, however, are not summed up in the Report, they are recorded in the volume of evidence taken, and form, perhaps, the most valuable product of the labours of the Committee. They have been already subjected to analysis in many quarters, and numerous recommendations for the amendment, reconstruction, and total overthrow of the law have been founded upon them. And there is no doubt that they will furnish, for years to come, justifications for all kinds of preposterous proposals, as well as hints for many much needed and judicious reforms. We are agreed, I believe, that the law of lunacy, while affording a satisfactory guarantee for the inviolability of personal liberty, is capable of improvement in several other directions; nay, I may say, that we are anxious for some legislative changes which will strengthen our hands in contributing to the welfare of the insane. Many of the improvements and legislative changes which we desire are indicated in the evidence taken by the Committee, which, after subsidence and filtration, will yield a solid residue of wisdom. But other improvements and changes, the want of which is generally recognised, are not adverted to; while as to several moot questions, the proof adduced is singularly inconclusive.

A cursory glance at the volume of evidence serves to convince that witnesses were examined who could well have been spared, that witnesses were not examined who could have given profitable information, and the witnesses who were examined differed exceedingly in the degree in which they

confined themselves to the special points before the Committee. As was inevitable the inquiry enlarged in all its dimensions as it rolled on, and so, towards its close, witnesses were found giving prominence to subjects which had not been broached in its earlier stages. Out of these defects in the evidence, which were unavoidable, considering the mode in which the work of a Select Committee is carried on, has already arisen the demand for a Royal Commission to institute a thorough and exhaustive inquiry into lunacy in all its bearings. It is probable that such a Commission would clear up obscurities, and afford some guidance and enlightenment, and yet I fain hope that the demand for it will not be listened to; at least, not for many years to come. It seems to me that we have had enough of inquiry and investigation and agitation, and that what is wanted now, in our department, is an era of tranquillity, time and composure, in which to develop our internal capacities and resources, and in which to utilise the information that we already possess. The arts of peace do not flourish when the sounds of war are in the air, and the attitude of self-defence is incompatible with steady progress. And our speciality has been in the din of battle from its beginning; it has had to protect itself against assailants on all hands. Beset by jealousy and suspicion from without, and perturbed by internecine feuds, it has had to fight out the great battles of non-restraint, of moral treatment, and of medical supremacy, and has won memorable victories for humanity, even in spite of humanity itself. From its prolonged contests it has, doubtless, derived some benefits. Its youthful sinews have been strengthened, its frame-work has been more firmly knit together in its many encounters, but it is now of mature age, and the work that awaits it cannot be well performed in a suit of armour, and while harassing attacks have to be repelled. In the interests of the sane and insane of society, and of science, it is desirable that our asylums and their officers should be exempted for a time from vexatious interference; not that they may sink into negligence and dull routine, but that, in quiet earnestness, they may expend their energies in domestic improvement, in the investigation of mental and nervous disease, and in perfecting treatment. Without further discussion, certain reforms may be effected, and that larger measure of reform which ought, perhaps, to accompany the codification of our lunacy laws, will not lose anything in solidity and completeness by being postponed for a season, during which a solution

is being sought of a series of problems connected with the care of the insane. The machinery which exists for the supervision and control of asylums has been pronounced fairly adequate, and further inquiry and agitation are not likely to remove the distrust with which such institutions will always, in some quarters, be regarded. It is hopeless to attempt by any amount of inquiry to pacify half-cured lunatics, or crack-brained enthusiasts, to conciliate the irreconcilables who must have a grievance, or to tranquillise the busy-bodies who think themselves philanthropists. Life is too short for the education of idiots, and perpetually to elucidate and explain where conviction is impossible, is only to pander to folly and foster prejudice.

Holding, as I do, that to be let alone is what our asylums in the meantime chiefly need, I cannot but regret the proposal which has been made during the present Session of Parliament to introduce a new element into the governing bodies of our public asylums. These institutions, it must be admitted, are, as a rule, fulfilling efficiently the purposes for which they were called into existence. They are improving year by year in structure, organisation, and discipline. The ratepayers are satisfied with their management. There is no popular outcry for a change in their constitution. In the asylums of different counties there are not to be noted those disparities in the cost of maintenance which, in the case of prisons, were so curious and indefensible. It is not mere insular conceit to say of them, that, with all their faults and shortcomings, they are a pattern to Europe and the world.

Why, then, we may ask, are public asylums to be disturbed in their beneficent career? Why try upon them an experiment which cannot ameliorate their condition, which it is said will be innocuous, but which may prove highly injurious? To give a direct representative control to the ratepayers over expenditure, and to confer uniformity on county administration, are laudable designs, but the advantages which are to accrue from including lunatic asylums in the new scheme are, I think, theoretical, and are more than counterbalanced by the drawbacks that must attend that step. No one maintains that under the new arrangement asylums will be more cheaply conducted than they have hitherto been, or will bestow increased benefits upon the insane poor; while most well-informed persons are persuaded that the addition of poor law guardians to their Visiting Committees will enhance the difficulties under which their officers labour.

The effects of such an addition will, doubtless, vary much in different districts of the country, but it is to be feared that its general tendency will be to drag down asylums to the workhouse level, and in some instances to substitute for the wise economy which is now characteristic of their management, a stupid parsimony, which commonly goes hand-in-hand with foolish extravagance. It is to be apprehended that the presence of Poor Law Guardians on Visiting Committees will render Lunatic Asylum service more distasteful than it is now to cultivated medical men, so that the tone and status of those engaged in this service will undergo gradual deterioration, a deterioration much to be lamented, for we all know how every asylum takes its complexion from its medical head, and how much the comfort and happiness of the inmates depend on his refinement of feeling.

Let us hope, then, that when the County Government Bill is re-introduced next Session, or at some still more remote period, asylums will be found to have been excluded from its operation. If modifications in their system of management be deemed essential, the correct policy would appear to be to deal with them in a manner analogous to that in which prisons have been dealt with, and in the case of asylums the process would be a comparatively simple one, as a Board of Commissioners already exists, which, extended and fortified, could readily assume whatever authority and duty it might be judged expedient to centralise, as the anomalies and inequalities in our asylum system, requiring correction, are really few and insignificant. But if again it should be decided that the control of County Financial Boards must stretch over asylums, and that elected members of these Boards must take part in their general as well as in their fiscal management, then, I think, endeavours should be made to secure the adoption of some such plan as that sketched out in the "Times" by my distinguished colleague, Dr. Lockhart Robertson, by which asylum medical officers would become servants of the Crown, and be ensured against some of the inconveniences with which they are now threatened. Independence of action, fixity of tenure, and security of pension, are what asylum medical officers are entitled to ask, not only with a view to their own comfort, but with an eye to the welfare of their patients and the claims of science.

And the latter consideration, the claims of science, ought not certainly to be lost sight of in any advocacy of the interests of our specialty that may hereafter be necessary, for

it is tolerably certain that the title of our specialty to public deference and acknowledgment must be founded henceforth mainly on its scientific character. With its past history science mingles, perhaps, less than we could wish. It is not implied that science has ever been ignored in lunatic asylums since they passed under medical care, nor that fruitful scientific researches have not been pursued in them; but it is argued that more engrossing occupations have hustled science into a subordinate place, and that non-scientific methods of studying insanity have prevailed. While the reign of terror was being swept away, and the dominion of kindness vindicated; while a new system of asylum polity was being elaborated; while furnishing, clothing, farming, the education of a staff of nurses and attendants, decorative art, and sanitary requirements, absorbed in turn the attention of asylum medical officers; and while they felt that their deserts would be measured by their achievements in these spheres of activity, rather than by any severe interrogation of nature that they might undertake, it was scarcely to be expected that science would flourish in asylums. And when again mental disease was not subjected to sober watching, but was contemplated from a metaphysical point of view, and in the light of preconceived notions, it was not to be anticipated that science would thrive in asylums. Without blaming our predecessors, nay, honouring them for what they accomplished in their sustained crusade against cruelty, ignorance, and prepossession, we are still bound to note that they made but a tardy scientific advance, and imparted to their specialty but a feeble scientific impulse. And hence it is that we are still suffering from more or less scientific lethargy, and have to recognise the somewhat chagrining truth, that we owe none of the great advances made recently in our knowledge of the nervous system in health and disease to members of our own specialty. The spirit of scientific inquiry is awakened; it is perceived that asylum medical officers can no longer content themselves as a body with successful administration of the establishments under their care, but that they rest under an obligation to extend our acquaintance with insanity, and to multiply and give precision to our means of dealing with it. Here and there most praiseworthy and fruitful microscopical investigations, clinical observations, and therapeutical experiments are being carried on, but we are still far from having reached that general diffusion of scientific work throughout our asylums which should be

aimed at, while in one respect it would almost seem that we have been retrograding of late. Under science, of course, is included psychology, or the study of the laws of the instinctive manifestation, and conscious intelligence, not only in man, but in all living beings, and it is in this branch of science that we have been, perhaps, falling back in our department in recent years. It must, I fear, on examination, be admitted that, while in psychology and philosophy generally, our countrymen are leading the van in Europe, in that particular branch of psychology that is conversant with morbid, mental states little or no work is being done in Great Britain. In the literature of insanity of to-day there is no attempt at mental analysis, and only the most perfunctory attempt at a classification of the expressions and products of the diseased mind. Half-a-dozen phrases, such as 'excitement,' 'incoherence,' and 'depression,' comprise our whole psychology, and even these are sometimes employed in a slipshod fashion. Beyond the careful compilations of Dr. Lauder Lindsay, relating to mind as exhibited in the lower animals, the ingenious essays of Dr. Ireland on some old philosophical controversies, and the observations of Dr. Nicolson upon criminal mental types, I know of no contributions since the publication of Maudsley's classical work, made by compeers of our own, to the matter of psychology, in relation either to what forms for us its central area, the phases of insanity, or to those circumferential planes that still lie within our sphere of obligation, and include comparative psychology, mental evolution, language, the characteristics of those born devoid of particular senses, and the manners and customs of races. In those latter regions of psychological inquiry, which are in such close contact with our own field, the work is again being carried on by those who are unconnected with us, by Herbert Spencer, Lewes and Bain, whose labours have been so discursive; by Darwin, who has given us his admirable studies of emotion, and his biographical notes of a baby; by Mr Francis Galton, who has so perspicuously traced out the hereditary transmission of mental traits, and who is now busied with inquiries of superlative importance into the time occupied in mental processes; by Mr. Romanes, who is diligently digging up the radicles of mind; by Mr Grant Allen, who is delineating the foundations of our æsthetical perceptions and feelings; and by others, who, without the pressing motives that ought to drive us into such researches, are undertaking them from the mere love of the exploit.

And in all this there is some decadence to be regretted, for in the older writers on insanity there are to be found, besides mere metaphysical subtleties and empty speculations, some acute observations on mental structure and action, on the objective lines of research, and an attempt at any rate at psychological inquiry. And we may depend upon it that if such inquiry is now neglected, no genuine progress is possible for us, for it is on a combination, nay, on the fusion of the two great elements recognised in the name of this Association—the medical and the psychological—that our hopes should be fixed. These two must not be hyphened but incorporated. It is necessary that we should know the intimate structure of the brain and the pathological changes to which its tissues are liable, but we cannot rest in this knowledge, for to essay to understand mental processes by the microscopic appearances of dead brain-cells, is infinitely more absurd than it would be to endeavour to explain a somersault by the aspects of an ultimate sarcoous element—the distance between neurility and thought being vastly greater than that between contractility and an athletic feat. Then, on the other hand, psychological work is necessary, but not all-sufficient. It is necessary that we should know the deviations from healthy mental states in which insanity consists, the order of their disorder, their origin and transmutations; but we cannot stop here, for we might as well try to excogitate the liver from the chemical analysis of bile, as to comprehend brain states by a study of mental variations alone. It is not on one nor the other, but on both of these lines of study that we must advance, if we are to attain to greater precision and success in the diagnosis, prognosis and treatment of insanity. And not even to both can we trust as long as they merely run parallel with each other. It is when they converge and rush together that a spark of genuine illumination is certain. The great value of Ferriers' labours consists, I believe, in their having opened up for us a pathway to a concrete mental pathology, which will ultimately lead to a position where we shall be able to find the subjective equivalents of morbid appearances or, conversely, the anatomical substrata of subjective states.

Now, I must not be taken to argue, that those psychological inquiries and scientific researches, by which I set so much store, are of binding obligation upon all asylum medical officers. It is not given to every one to be an original investigator, and the daily drudgery of life—‘the trivial round,

the common task'—has a priority of call upon each of us. But my thesis is, that into this daily drudgery more science should be infused than has hitherto been done, that an increasing number of volunteers should transcend it, and push their reconnaissances further than has yet been attempted to the territory of darkness and doubt, and that this Association, representing the culture and highest aims of our department, should, by all means in its power, promote scientific research. It is clearly incumbent upon all asylum medical officers to keep abreast of general medical science, and to give their patients the benefit of every addition that is made to the resources of the healing art; and it is clearly incumbent upon our department as a whole to maintain a rate of scientific progress commensurate with the opportunities which it enjoys, and not notoriously sluggish, when contrasted with the pace of other sections of medicine. But to do this requires now-a-days all the vigour that we can command, and every incitement to scientific work that can be brought into play, for the boundaries of scientific medicine are shifting daily, and those of disease are not stationary. We cannot rest and be thankful on our scientific road, for as surely as medical knowledge is maturing, so that we are putting away childish things and adopting the weapons of manhood, so surely is disease changing its features and making new encroachments upon health. We must be ever on the alert, for science is fluent, and there is no finality in disease.

These remarks are not intended as a prelude to a demonstration of the encroachments of that particular class of diseases in which we are principally interested. I am not going to parade before you once more the veteran controversy whether insanity is on the increase, a controversy which was indeed somewhat threadbare until it was lately rehabilitated with much industry by Dr. Hack Tuke. I have no desire to traverse again a well-beaten track, but I do wish to haunt its confines so far as to protest against two assumptions that are now very confidently promulgated by those who frequent it. The first of these is that insanity is a fixed quantity, a determinate burden imposed upon us that we can neither lighten nor shake off, but the galling effects of which we may alleviate by dexterous manipulations, and by moving it about from place to place, as when we transfer lunatics from asylums to workhouses, or from workhouses to private dwellings. And the second of these is that insanity is a diminishing quantity, a growth of ignorance that civilisation

is steadily lopping away, an evil that is becoming 'small by degrees and beautifully less,' and that will some day reach the vanishing point. And I take the trouble to protest against these assumptions, because they are not merely harmless fancies, but theories that are apt to paralyse action and encourage scientific indolence.

We are all now-a-days too apt to delude ourselves with a dream of continuous evolution. It is comforting to reflect that while we are taking our ease 'the thoughts of men are widening,' and that without any assistance from us 'an increasing purpose is running through the ages.' Progress is the law, and administrative nihilism is obviously our policy. We cannot influence the issue of the fight for life that is proceeding. Let us look on then with stoical indifference. Let us adopt the creed of a recent writer in a scientific magazine, who might be a caricaturist, but is quite serious when he says, 'I look on all constitutional diseases as the tentative efforts of Nature to stop the propagation of bad protoplasm.' Unhappy, incontinent, bungling Nature, first to give birth to bad protoplasm and then to labour to compass its destruction before it attains to puberty!

But the misfortune is that these lofty and specious notions are subject to serious deductions, and are not practically satisfactory, for in the flowing tide of progress there are innumerable ebbing waves, and it is in the partial rather than in the general movement that mankind is interested. Not only evolution, but involution and dissolution abound around us, and it is with the latter that we as medical men are chiefly concerned. Our first duty is to our patients who do not care much about the triumph of the type, but who are very careful of the single life. Our next duty is to the community of which we form a part, which wishes well to the universe, but is much more solicitous about its own health and prosperity. And in the discharge of our duties we have to oppose evolution, promoting the survival of the unfittest, of weakly and crippled beings. Our benevolence is short-sighted. We relieve suffering wherever we find it, nothing doubting. We have not soared to such cosmopolitan enthusiasm as would make us placidly acquiesce in the destruction of our countrymen, even although the social millennium should be thereby hastened in its advent; and so we toil on exposing, and, as far as may be, abolishing the causes of disease with no faith that evolution will help us. For our studies of evolution do not sanction such a faith,

Myriads of species of plants and animals have become extinct. In every region of the globe there have been a succession of partial civilisations that have been succeeded by periods of barbarism. Some of the savages of to-day are the heirs of higher races that have perished, and our astronomers even look forward to a time when in the course of universal congelation a few wretched snow huts close to the equator will contain the last remnants of our species.

What guarantee, then, have we that it is well with us that our nation will not dwindle and decay long before it is overtaken by geologic calamity? None whatever, save our own watchfulness and virtue. Only by the teachings of science, the lessons of experience, and the monitions of conscience, can we avoid a fate which has overtaken so many splendid empires. There is nothing inherent in our blood to save us. Even in our midst and to-day the ravages of rapid degeneration may be witnessed in certain portions of our population.

‘The descendants of the exiles from Ulster,’ says an eminent authority, ‘who were driven into Sligo, where they have ever since been exposed to two of the great brutalisers—hunger and ignorance—are readily distinguished from their kindred in Meath and other districts, as remarkable for the examples of human deterioration from known cases which they present. Five feet two inches in height, pot-bellied, bow-legged, abortively featured, their clothing a wisp of rags, these spectres of a people that were once well grown, able-bodied, and comely stalk abroad, the apparitions of Irish want and ugliness.’

‘The inhabitants of the courts and alleys in the Holborn district,’ said the Rev. William Lockart, Roman Catholic Priest, at a recent Government inquiry, ‘die much more quickly than one experienced with poor in the country expects. They have no stamina. One has to be careful to be early in administering to them the last rites of religion.’ ‘In 1,100 of them,’ said Dr. Robinson, ‘there were sixty deaths in one year. There were two suicides, two sudden deaths, eight deaths from consumption, and nine from fever. The children, as a rule, are born ricketty and scrofulous, and suffer from contagious diseases, parasites and ophthalmia.’

These are coarse and glaring instances of the evils wrought by some of the best known factors of degeneration, and innumerable modern instances of a like kind might be quoted. The effects of filth and destitution are patent enough. But there are other more insidious degenerative

agents at work which, as psychological physicians caring for the health of the people, it is our duty to watch very narrowly, and these may be summed up under excessive commotion and tension of the nervous system. Organic forms are being incessantly modified in some way by the external conditions that operate upon them. Vitality is liable to disturbance in direct proportion to the comprehensiveness of the conditions in which it is maintained, and these conditions increase in comprehensiveness as civilisation advances. Every discovery in physical science, every new invention, every freak of fashion, has an effect for good or ill upon the nervous system. The discovery of gas was almost equivalent to a change in the earth's diurnal rotation, as affecting the length of day and night, and must have been followed by corresponding modifications in the periodicities of the nervous system. The invention of railways was to our wealthy classes almost tantamount to a change in the earth's orbital translation round the sun, enabling them to live through two summers in twelve months, and so quickening their vital transitions and nervous activities. The introduction of afternoon tea has, we are assured, aggravated certain neurotic tendencies.

The pressure of modern life falls especially upon the nervous system, and the danger of this pressure lurks perhaps in the suddenness with which its incidence changes. Time is not allowed for the adjustment of inner to outer relations. The whirl of surrounding contingencies is so swift that a perfect correspondence with their successive phases is scarcely attainable. Of course constant adaptation is going on. Progressive differentiation of structure and function keep pace, more or less successfully, with the march of external co-existences and sequences, and with every increment of knowledge and skill there is some addition to the ideagenic and kinetic substrata. But the nervous system cannot, on assuming new responsibilities, discharge itself of old cares and incumbrances. In its textures are inextricably interwoven ancestral wisdom and folly; in its ganglia are imbedded the feelings and instincts of the lower animals, and as it grows its burdens and complexity increase together.

And it is in the increasing complexity of the nervous organization, and in the rapidity of the successive modifications to which it is subjected, that some of the risks of degeneration are to be found. The nervous organization

becomes more unstable as it becomes more complex. 'The nervous tissue of animals,' says Charcot, 'seems much better able than that of man to resist the influence of the diverse causes of irritation and inflammation. All experimenters are aware that even the most serious traumatic lesions of the spinal cord, or of the peripheral nerves do not readily produce in the case of most animals, a myelitis or a neuritis having some duration which could be considered comparable with those developed in man after the very slightest lesions.'

The higher susceptibility to injury of the nerve-tissues in man, as compared with the lower animals, is associated with a higher liability to all kinds of nervous diseases, which are again of all diseases, perhaps, the most hereditary. And their hereditariness may have two sources—it may originate in a molecular *error loci* in the embryo, or in a functional habit acquired in extrauterine life. 'It can be no wonder if, in the infinitely complex movements,' says our greatest living medical philosopher, 'which fulfil the scheme of embryonic development sometimes this or that molecule divides itself not quite normally; sometimes this or that molecule drops ever so little out of line; or sometimes there occurs unduly this or that divergence, or this or that confusion of molecules, and in immeasurably small errors of this sort germinal antecedents may establish themselves for even the most startling malformations which adorn our museums;' and for cerebral abnormalities and faults also, I would add, with their concomitant mental defects and aberrations, which, like supernumerary toes and fingers, are apt to become fixed and appropriated as part of the transmissible type of the animal.

But in the functional activities of the nervous system on the other hand, a special alteration of structure which has not arisen spontaneously out of a natural variation, but has been induced by the incidence and succession of external forces, may be established, and affect the reproductive centres, and cause them to unfold into organisms exhibiting like modifications, and thus resulting in the propagation of nervous disease. Instability of nerve tissue, induced by undue augmentation or perversion of function, becomes a disorder which may be handed on to offspring, as was visibly the case with Brown-Séquard's guinea-pigs, in which the artificially established epilepsy of the parents became constitutional epilepsy in their descen-

dants. And this instability is now manufactured to a very large extent, and is, in all probability, responsible for a wide propagation of nerve disease. The nervous functions are not only subjected to perpetual commotion now-a-days, but to severe strain. The energies of the nerve centres are often ruthlessly overtaxed, and waste so great is produced that it cannot be repaired in the ordinary periods of repose. Hence relaxation and incapacities result, and habitual excess of function passes over into derangement, which may re-appear in children in its identical or some allotropic form, or as that general nervous debility which is almost itself a disease, and which forms so large a part in the 'causation compound' of so many diseases. The studious habits of the cultivated Germans have led to a wide diffusion amongst them of congenital myopia, which is almost unknown in rural populations. Let us take care that our restless habits do not eventuate in still more disastrous consequences.

But habitual excess, or perversion of function of the nerve-centres, may occasion a greatly increased prevalence of disease, without the intervention of hereditary propagation. Mr. Myers has proved that an extraordinary prevalence of heart disease amongst soldiers must be traced to the tightly fitting dress which they have been compelled to wear, and to the mechanical obstruction to the circulation which that creates. Now, is it not reasonable to suppose that changes in habits or modes of life, interfering with the free play of the whole nervous system, and imposing an unaccustomed strain upon certain parts of it, will result in an increase of the disorders to which it is liable? Writers' cramp has been shown to be, in a large proportion of cases, a fatigue disease, due to a painful and tender condition of the nerves of the limb, induced solely by over-work. Is it not tolerably certain that if, from any cause, there should be an increase in the number of persons earning their living by penmanship, there would be an increase in the number of cases of writers' cramp? Nerve tissue is everywhere identical in structure and properties. In the optic discs the ophthalmoscope exhibits to us congestion and œdema as the consequences of over-work of the eye. May we not fairly infer that congestion and œdema of certain areas of the brain are the penalties of over-work of the mind, especially as we know, from actual observation, that local vascular turgescence accompanies every access of functional activity in the cerebrum? And is it not, at least, probable that over-work

of the mind is becoming more common in a thickly populated country, where the strain of competition is ever tightening; where emigration is ever drafting off those portions of the community in whom the physical and animal character predominates, and leaving an ever swelling crowd of keen and tremulous candidates for fortune or bread and butter?

It is not, of course, to be lost sight of that while some causes of nerve disease have become more prevalent and active, others have dwindled, and been circumscribed in their operation. Ague has been drained away, and the brood of maladies which it engendered has almost disappeared. Small-pox has been forestalled by vaccination, and cases illustrating its nervous sequelæ are now rarely met with. But my purpose is not to demonstrate how the balance inclines between the increasing and lessening causes of nerve disease. It is not to argue that nerve diseases are spreading amongst us, but rather to indicate that there is no ground for asserting that they are diminishing in frequency, or are stationary, and to persuade that we must not allow ourselves to be lulled into inactivity by any such flattering assurance, that we must not trust to evolution, but vigilantly watch the pathological horizon, and be ready to bring the forces of science to resist every fresh onslaught of disease.

And it is no imaginary opponent that I am contending with, in endeavouring to establish these positions. With reference to one great group of nervous diseases, the psychoses, we are often cheerfully assured that they are lessening their hold upon us, or that they do not vary in frequency from time to time; and with reference to the whole class of nervous diseases, Dr. Althaus has lately maintained, with great ability, that they constitute a definite fixed quantity that neither waxes nor wanes, and this conclusion he founds upon statistical facts. 'The rate at which diseases of the nervous system,' says Dr. Althaus, 'proves fatal to the population of this country is a steady one, and subject to a definite law, to which there are not any or only apparent exceptions. This rate does not appear to vary perceptibly from time to time.' In support of this proposition, he adduces statistics which show that the number of deaths due to diseases of the nervous system, registered in England and Wales, has maintained, during the last five lustra, nearly the same proportion to the population and to general mortality. From 1847 to 1851, inclusive, 27 persons, and

from 1867 to 1871, inclusive, 28 persons in every 10,000 living, died of nervous diseases, while throughout the 25 years, included between the extremes named, the percentage of deaths from nervous diseases, upon deaths from all causes, varied to a scarcely appreciable extent. Now, it must be admitted that Dr. Althaus' figures, with reference to the mortality from nervous diseases, do exhibit a very curious evenness from year to year, but this becomes itself an element of suspicion, when we find no parallel to it in the results obtained from similar calculations, applied to the mortality from other diseases. The invalidity of these figures need not, however, be rested on the speciousness of their appearance, for an examination of the Registrar-General's Reports, from which they are drawn, speedily reveals many sources of fallacy in connection with them, which have not been altogether overlooked by Dr. Althaus, but to which he does not seem to have attached sufficient importance. In the first place, it is obvious that, as regards nervous diseases, we have no guarantee for that accuracy and uniformity of diagnosis, without which medical statistics are simply misleading. During the period covered by Dr. Althaus' inquiry, an enormous advance has been achieved in medical knowledge—a great improvement has taken place in medical education; and, consequently, in the care and precision with which medical work is carried on throughout the country. No one will question that a general practitioner to-day called upon to certify one hundred cases of death, would classify them in a manner very different from that which would have been adopted by a general practitioner thirty years ago. The headings or groups under which the numerical units had to be arranged being the same in both cases, the distribution of these units under them would vary in the two, in a way that would only become intelligible in the light of the history of medicine. The difference between the two classifications would correspond with a change in medical opinion, and that change with a movement in the direction of more accurate analysis. In the tabulation of to-day, particular diseases with a definite signification would bulk more largely than in the tabulation of thirty years ago; while the vague, general diseases with no very sharp outlines, the cities of refuge for doubtful cases, would be less crowded now than in the older grouping. Old age—which is sufficiently vague as a cause of death—is

represented in the Registrar-General's return for 1838, as responsible for ten per cent. of the whole mortality; while in the same returns for 1872 it stands charged with only five per cent. Now, no one will contend that old age is only half as fatal now as it was forty years ago. The explanation of the disparity in the figures is that much that was formerly included in old age is now distinguished from it, and that many cases that would formerly have swelled this item of mortality are now distributed under other headings. Well, the improved discrimination and insight that have led to this statistical fallacy have also, I believe, become the parents of confusion and misconception in relation to the statistics of nervous diseases. Many of these diseases do not possess the striking and characteristic features which would prevent ambiguity in their nomenclature, and most of them are liable to be interrupted and complicated by diseases of other organs and tissues. And thus it may have come about, that these diseases are now sorted differently from what they formerly were, and that deaths which were at one time ascribed to them are now registered under other orders of causes. It is indisputable that certain obscure cases of cerebral disorganisation, which our predecessors would have called brain disease, are now recognised as of syphilitic origin, and are certified accordingly. And that many deaths in asylums, which in bygone days would have been entered as exhaustion after mania, so finding a place in the Registrar's returns amongst nervous diseases, are now by post-mortem investigation shown to be due to pneumonia, and are hence registered under diseases of the respiratory organs. Then amongst nervous diseases there are some that used to have very hazy boundaries, and that even modern pathology has not sharply marked out, although it has greatly circumscribed them. Convulsions, which in children under five years of age are responsible for more than one-third of the whole mortality from diseases of the nervous system, stood at one time as the wholesale appellation for all sudden and mysterious infantine deaths, but with us the term, although still to some extent a cover for ignorance and indolence, is certainly employed with less impartial catholicity.

Now, if in the instances which have been mentioned, as well as in many others not specified, the progress of medicine has resulted in the registration under other orders of disease, of many deaths which would formerly have been registered under the order of nervous diseases, and, if at the same

time, the number of deaths reported as due to nervous diseases has preserved an undiminished proportion to the general mortality, the conclusion is irresistible that there must have been an increased production of nervous disease to compensate for the withdrawal of the equivocal cases. And this conclusion is strengthened by the reflection that an improvement in treatment has kept pace with the improvement in the diagnosis of disease, and that the employment of new remedies has probably secured a material prolongation of life in some prevalent varieties of nervous disease. But this prolongation ought to be represented by a proportionate diminution in the rate of mortality, and when no such diminution is apparent we are again justified in inferring that the benefits of improved treatment to the community are counterbalanced by a more rapid multiplication of nervous maladies.

The justice of these observations is, I think, vindicated by a scrutiny of the mortality ascribed to some particular nervous diseases in relation to which the causes of error just indicated are less likely to have operated. Epilepsy, for example, is a well-marked disease; it is of protracted duration; its diagnosis is simple; it is not so liable as other nervous affections to be cut short and ousted from its fair representation on the bills of mortality by other diseases, for the incursion of an acute disease in a chronic epileptic is often characterised by an explosion of fits, which cuts short the incipient acute disease, and so ensures the attribution of the death to epilepsy. Well, it is remarkable that the rate of mortality from epilepsy has not been a steady one, but has varied perceptibly from time to time, having, from 1847 to 1862, manifested a very decided upward tendency, which in the years subsequent to 1862—in those years, in fact, in which the bromide of potassium came into general use—underwent a check. Tetanus, again, about which there could not be much mistake, figured in gradually increasing proportion as a cause of mortality from 1838 to 1856, and chorea, also an easily diagnosed malady, has been much more fatal in recent years than it was seven and eight lustra ago.

These observations make it, I think, tolerably certain that Dr. Althaus' allegation that a certain mortality from nervous diseases, subject to little or no variation, has been decreed to the population of England and Wales is untenable, and that the whole inquiry in the shape which it has hitherto assumed is

an unprofitable one. The problem is too complex to admit of solution at present, and cannot even be thoroughly examined until our acquaintance with the etiology of these diseases is much more intimate than it now is. Medical skill and statistical ingenuity have still much to accomplish before the registered mortality from nervous diseases can afford us reliable data on which to base calculations as to the amount of sickness, invaliding and incapacity, which they occasion. When we find in the Registrar-General's Report for 1876, 987 deaths ascribed to insanity (and it is difficult for us to understand what insanity as a cause of death really means), and when we find in the Report of the Commissioners in Lunacy for the same year 4,568 deaths of insane persons reported as having taken place in asylums, we are in a position to perceive how utterly inadequate the former returns are to supply us with the means of estimating the prevalence of any nervous disease. And when we find in the Registrar-General's Report upwards of 26,000 deaths, more than one-third of the whole mortality from nervous diseases, ascribed to apoplexy and paralysis which are so commonly of purely vascular origin, we are able to appreciate the futility of founding on such returns any speculations as to the increasing or diminishing liability of the nervous organs and textures to disorder or degeneration, and as to the pathological effects of the conditions of secular progress upon them. Of this we may be satisfied, that nervous diseases do not stand still. As the general rate of mortality fluctuates from time to time in accordance with atmospheric changes, so doubtless does the rate of prevalence of nerve disease fluctuate in accordance with vicissitudes in that moral atmosphere in which the mind lives and moves and has its being. But as to what their general tendency is apart from temporary fluctuations, we are not in a position to dogmatise. And our policy, it seems to me, is not to wander clueless about this mazy subject, but to apply ourselves to determine whether particular nervous diseases that we can satisfactorily distinguish are spreading or not, and under what circumstances they wax or wane. With reference to many nervous diseases, this may now be done successfully, and the information obtained will be definite and trustworthy, will throw light on the disease and its congeners, and will be available for practical purposes. It has been ascertained that hydrophobia, an easily distinguishable disease, has been increasing rapidly, 228 cases having

occurred in the five years from 1872 to 1876, against 159 in the six years from 1866 to 1871. It has been shown that an increase of hydrophobia began soon after a reduction of the dog tax, and that the disease has a well-marked geographical distribution. The publication of these facts led to the formation of a competent committee to investigate hydrophobia anew, to the provision of funds for the purpose, and to a considerable destruction of stray dogs. And with respect to a large number of nervous diseases, similar definite results might be obtained, and similar renewed investigations undertaken with very sanguine anticipations.

And in the further investigation of nervous disease, which it is to be hoped will be undertaken, conjoint inquiries ought to take a prominent place, for one reason of the tardy scientific advance of our department, besides those previously mentioned, is probably to be discovered in the fact that most of the work done in it has been carried on by solitary labourers. Excellent results have often been obtained by individual effort, but yet it is indisputable, that medical science can be best pursued by an organised system of research, and by a methodical division of labour amongst a disciplined band of explorers. Thus only can facts be duly certified, the treacheries of personal bias and partial scrutiny avoided, and speedy progress achieved, for obstacles that would have long retarded the isolated student melt away before the ardour of a group of pioneers.

I am aware that the advantages of united and correlated investigations have already received recognition in this Society, and that Committees have been appointed to conduct certain inquiries, and have collected some useful information. But as yet no results of any magnitude have been obtained by concerted and co-operative industry in our Association, and this is not to be wondered at when it is borne in mind that its members are scattered over the country, and have great difficulty in meeting or working together.

My own hopes for the future of conjoint researches in connexion with mental diseases are fixed not so much upon Committees of the Association, as upon the combined action of the Medical Officers in large Asylums, and upon local committees, of which Asylum Medical Officers might form the nucleus, and into which might be attracted the medical talent and enterprise that abound more or less in the neighbourhood of every asylum. In this way much good work might be ac-

complished, and something might be done to break down whatever estrangement has sprung up between our wing and the main body of the profession.

But more fruitful of good effects than even any conjoint researches would be the conversion of our asylums into clinical schools to a far greater extent than has yet been attempted. Only when an Asylum Medical Officer is accompanied on his visits by other medical officers or students, when he is teaching as well as observing and prescribing, and when his comments and practice are canvassed by keen and even captious intellects, can he do full justice to himself, his patients, and his profession. And asylums situated near the centres of medical education ought to be readily made clinical schools. The backwardness of students in availing themselves of the opportunities hitherto given them of attending in Asylum wards must, I think, be partly attributed to the desultory character of the teaching which has been there provided for them. The novelty of being in a mad-house soon wears off, the curiosity as to lunatic eccentricities and antics soon palls, and then hard-worked students, hungry for skill and knowledge, are not to be detained by racy anecdotes, nor learned disquisitions. When we make our asylum lectures dove-tail as it were into the general medical curriculum, when we teach with rigorous exactness the higher physiology and pathology of the nervous system, when we collate essential facts into tenable compass and serviceable form, and above all, when we guide to the just observation of symptoms and the dexterous use of remedies our wards will be thronged with eager students. Then, too, will attendance in these wards obtain due recognition as an integral part of medical education, and perhaps as a recommendation for some kind of professional dignity. For when all portals to the profession, save one, are closed, and when University degrees and the licenses of corporations have ceased to be qualifications for practice, and have become honorary distinctions, or badges of special preparation, it will not be unreasonable to ask that some mark of fitness should be conceded to those who have diligently studied a recondite branch of medicine, and who are willing to submit their knowledge of it to the test of examination. Medical Psychology might be appropriately included in the list of subjects to be taken up by candidates for the degree in Public Health or State Medicine. That degree would then become the accredited passport to Lunatic Asylum ap-

pointments, in which, again, there is an urgent and constant need of acquaintance with vital statistics, hygiene, sanitary engineering, and other subjects that are taken cognisance of in the examination for a Public Health degree.

Equipped with a Public Health degree, braced by the liberal training which the possession of that degree should involve, and particularly by the physico-chemical training which is day by day becoming of more consequence as the preliminary of all medical study, supported by zealous pupils and allies, our Asylum Medical Officers should be in a position to do valiant service to science, and to win for it many precious trophies. The material which lies around them is vast, their facilities for observation are unrivalled, and the assistance which they have at their disposal is of the most valuable description. They can calculate, too, upon a certain amount of that most fertile leisure that comes not in broken fragments, but in regular allotments. The great Lord Verulam reared up the stately fabric of his philosophy in snatches of meditation during the intervals of the Law Courts and State affairs, and surely many of our asylum doctors could find time between their rounds and correspondence for some searching into Nature in her abnormal phases. This Association would be fulfilling not the least important part of its mission if it encouraged such searchings, not merely by providing, as it does, in its Journal, a medium for the publication of its results, and for the interchange of thought amongst those engaged in it, but by contributing from its own funds, or, through its representations, from some other source, such as the Government grant in aid of research, towards the purchase of the instruments of precision that are so exceedingly costly, but that are so essentially requisite in modern physiological and pathological inquiries.

When I began this address, I proposed to myself to endeavour to supply an answer to questions frequently put by those who are just entering our specialty, and who ask what line of inquiry ought I to take up, what investigation may I enter upon with a fair prospect of a substantial return for my outlay of time and trouble? I proposed to indicate the directions which, in my view, physiological and pathological inquiry in relation to the nervous system may now most hopefully take, and to predict with whatever power of vaticination a careful survey of the past confers, the nature of the discoveries that are in store for

us. And now I find myself in the fulness of speech on the vestibule of my subject, and at the end of your patience. The Editors of the Journal will, perhaps, permit me, at some future day, to deliver in its pages the message which I have now failed to convey—an anticipation which consoles me for having to suppress at present speculations as to the future of localization of cerebral function of neuro-embryology, of the pathological chemistry of the brain, of psychological experiments, and of the application of the thermo-electric pile, the microphone and other instruments, to the elucidation of intracranial condition and changes.

These topics, and many others that might be enumerated, present an ample field to any number of ardent students, and each and all of them promise to reward investigation. One cannot, indeed, glance at the ground that lies immediately in front of us without feeling sanguine that an enormous access of knowledge in regard to mind and brain, will, in all likelihood, distinguish the close of this century. We are justified in looking for brilliant illumination in our knowledge of mental and cerebral states, and for a vast increase in our power of dealing with them. Mr. Simon, who is no juvenile enthusiast, holds that some one may shortly hit upon a specific for cancer. Why should we, then, despair of curing general paralysis or epilepsy? We have followed hitherto with too much docility in the footsteps of empiricism, and it must be by experimental pharmacology that we must now advance. New acquisitions in the shape of drugs are being daily given to us; it must be ours to define and localise their actions, tracing the connexions between chemical composition and physiological effects. Many of these possess striking and distinctive actions, which we ought to be able to utilize in the treatment of disease of the great nerve centres, which again we may before long be able to influence more directly than through drugs. It has been hinted that antiseptic surgery and our more accurate physiological and anatomical knowledge may yet make it possible to interfere instrumentally with some of these centres, and the experiences of nerve stretching and section, and of the electrization of the brain, especially in Ferrier's remarkable case, in which hallucinations of a special sense were removed by the continuous current, all point to an enlarged influence and control over the nutrition and functional activity of the nerve centres, and, therefore, to an increased control over disease.

And while we are thus hopeful as to the future of our specialty in relation to the curative treatment, we are entitled, I think, to be still more hopeful as to the part which it is destined to play in preventive medicine. There its authority and usefulness must surely and widely extend. The medical psychologist of the future cannot be confined to his asylum wards. It must be his to walk abroad and anticipate disease by throwing the weight of his experience and wisdom into the scales in favour of purity and truth in all questions of personal and social ethics. It must be his to warn in time against those little departures from strict physiological rectitude which lead after long intervals to mental overthrow and ruin. In education which begins not with the alphabet, but in the uterus, where the foundations of character are laid by the impression made on the embryo, and which continues until adult age, his counsel will be sought at every stage, so that the supplies of nourishment may be ordered in harmony with the developmental activity for the time being of the different groups of nerve centres, and so that we shall no longer have to contend with dislocations of knowledge and wasteful antagonisms of feeling. In the preliminaries of matrimony he will take his place beside the lawyer and his settlements, and marriages that may have been made in heaven, will be calmly revised in the consulting-room under the shade of two family trees. In the domestic circle he will become, as Dr. Bucknill has eloquently told us, the trusted confessor, competent by his insight to examine, and his art to heal those moral sores that fester, unsuspected in so many minds, and on which insanity is prone to graft itself, even as malignancy fastens on a raw surface. In the zenith of strength and ambition he will raise his warning voice against the prodigality that ends in the husks of despondency, and in the decline of years he will stretch forth his hand to support the tottering intellect, and to postpone the descent into the depths of fatuity.

With no arrogant pretensions, claiming not to be priest or prophet, but with the far sweep of vision that a standpoint on the heights of science gives, he will survey his day and generation, and with the modesty that is born of learning, advise how best to baffle our arch enemy disease.

To us the medical psychologists of the period, whose influence is scant, upon whom no such lofty mission devolves, it is still a duty to aid, as best we may, in warding off the evils with which the body politic is threatened.

And in order to do this, we must diligently study etiology, which is the basis of prophylaxis, and have regard to every social movement and political transition. Nor is it allowable for us to ignore the operation of that supreme faculty which, independently of sense and reason, enables man to apprehend the infinite. To us, that towering growth of consciousness which has its germ in primitive perception, its roots in the substance of history, and its branches in the heights of modern speculation, has a vivid interest, and an intimate relation to our daily work. For religion is still in the ascendant. It is not, as Feuerbach would have us believe, a brain-sickly fancy, but a conquering power, and the abnormality is not in those who yield themselves to its sway, but in those who profess to have shaken it off, and possess themselves in blank apathy or despair.

In following up the manifold historical evolution of religion in different races and regions, the medical psychologist must, I believe, become convinced that in all its transformations from the grossest fetishism up to the most spiritual belief it has made towards health, and has had a benign effect upon the human mind. It has been as the keystone of the arch-giving strength and completeness to consciousness. It has ever tended to preserve the equilibrium of the nervous system by the relief which it has afforded in the anguish of remorse, by the consolation which it has supplied under bereavement, and by the support which it has given in suffering and sickness. Who can say from what universal madness it may not have saved our race? True! in religion itself there is an inward disturbance that is not without hazard, while the disintegration of religious belief often induces mental aberration. But the general effect of a settled faith in those who have inherited it, or who have arrived at it, is to impart firmness and tranquillity to the whole nature. Almost every ascent from a lower to a higher belief, and every fresh glow in an ancient faith, may be shown to have proved favourable to sanity alike by its direct action on the mind, and by its indirect action through its influence on morals.

O, human soul! as long as thou canst so
Set up a mark of everlasting light,
Above the howling senses ebb and flow,

To cheer thee, and to right thee if thou roam,
Not with lost toil thou labourest through the night—
Thou mak'st the heaven thou hop'st indeed thy home.

The emphasis which I have laid upon science this afternoon in connection with asylum work might perhaps lead to the suspicion that I considered it the one thing needful in our lunatic hospitals. I would wish, therefore, finally to guard myself against such a misconception by saying that I am not insensible to the value of other qualities, above and beyond scientific tastes and acquirements in those who have to minister to the mind diseased. If I have refrained from dwelling upon these qualities, it is not because I under-rate them, but because I am persuaded of their prevalence. No one can inspect asylums in this country without perceiving with admiration the practical benevolence and administrative ability that are engaged in their service, and that make them such well ordered homes for a 'strangely visited people.' And no one can mingle much with the officers who preside over these asylums without arriving at the conclusion that they are, as a rule, animated by something higher than self-seeking, personal vanity, or the craving for the guinea fee. Most of them, happily, are stirred by that zeal that Talleyrand sneered at, that it is the fashion to decry, but that is the motive power of so much that is noble in human conduct, and of which one is glad to think there is often a strong under-current even beneath the deceptive surface of cynicism and indifference.

We may hold that science is for the future the true

"St. Fillan's well,
Whose spring can frenzied dreams dispel,
And the crazed brain restore ;"

but we must at the same time maintain that Science is only lovely and of good report, when she is the handmaid of humanity, and when she blends modesty and tenderness with her native majesty of mien.

Physiology and Pathology of the Sympathetic System of Nerves.
By Dr. A. EULENBURG, Prof. of Medicine, Univ. of Greifswald, and Dr. P. GUTTMANN, Privat Docent in Medicine, Univ. of Berlin. Translated by A. NAPIER, M.D., Glasgow.*

(Continued from page 208.)

PART II. PATHOLOGY.

In this second part of our Essay we shall discuss a number of diseases which are certainly or probably connected with the sympathetic nervous system.

This connection may result—

1st. From the presence of symptoms which resemble, or are identical with, those which we recognise as expressions of the physiological function of the sympathetic, and which we have enumerated and explained in the former part of this essay.

2ndly. From pathological anatomical changes in the sympathetic nerve.

Those conditions usually go together, but not invariably; thus, the pathological alterations may be completely wanting, or, on the other hand, they may be found in cases which were not before suspected to have any connection with the sympathetic system.

We begin with the consideration of the affections of the cervical sympathetic, afterwards taking up those which probably have relation to some change in the thoracic and abdominal portions of that nerve.

I.—FUNCTIONAL DISTURBANCES IN THE DOMAIN OF THE CERVICAL SYMPATHETIC.

These belong to the most sharply defined group of phenomena met with in the otherwise somewhat obscure pathology of the sympathetic nervous system. The appearances are sometimes those of irritation, sometimes those of paralysis—

* It should be stated that it was for this Essay that the Astley Cooper Prize for 1877 was originally awarded to Drs. Eulenburg and Guttmann—a decision, however, which was subsequently overthrown on the technical ground that the paper was the work of *two* authors, and not of one only—as the terms of Sir A. Cooper's will seem to require. This essay having been handed in in October, 1876, there are no references to any papers on the subject written since then.

approaching in character the symptoms either of experimental stimulation or of division of the cervical sympathetic, the latter* being more common than the former. The symptoms of paralysis of the sympathetic in men are rarely so pronounced as those artificially produced in animals by division, as paralysis seldom attacks *all* the fibres of the nerve, vasomotor as well as oculo-pupillary, as is the case in division.

The conditions which give rise to disturbances of function in the cervical sympathetic may, so far as they are known to us, be arranged as follows:—

- (a) Compression of the cervical sympathetic by tumours.
- (b) Injuries to the cervical sympathetic.
- (c) Injury or disease of the cervical part of the spinal cord.

Besides, there occur simple functional disturbances in the cervical sympathetic, either alone or accompanying some other disease, and without any objectively-demonstrable cause.

In the above order we will now shortly submit the following observations:—

A. Compression of the Cervical Sympathetic Nerve by Tumours.—Willebrandt† observed, in cases of glandular swelling in the neck, a contraction of the pupil, which returned to its normal size when inunction of iodide of potassium had caused the tumours to subside. In cases reported by Ogle,‡ Héineke,§ and Verneuil,|| contraction of the pupil was brought on by large carcinomatous growths in the neck. In the last quoted case there were also symptoms showing that the vasomotor filaments were involved—elevation of temperature and increased secretion of perspiration on the whole of one side of the face. In another case recorded by Ogle,¶ the vasomotor and oculo-pupillary symptoms were very well marked, the compression of the sympathetic being caused by a cicatrix on the right side of the neck. There were here, on the right side, contraction of the

* In Poiteau's comparative observations ("Archiv. gen. de Med," 1869, Août) there are nineteen cases of paralysis and nine of irritation of the cervical sympathetic.

† Willebrandt, "Archiv. für Ophthalmologie," 1855, Bd. I., p. 319.

‡ Ogle, "Medico-Chirurgical Transactions," T. xli., p. 398.

§ Heineke, "Greifswalder med. Beiträge," 1860, Bd. ii.

|| Verneuil, "Gaz. des hôpitaux," 1864, 16 April.

¶ Ogle, "Lancet," 17 April, 1869.

pupil, flattening of the cornea, injection of the conjunctiva, congestion of the ear and cheek, dilatation of the temporal artery, and elevation of temperature in the cavities of the mouth and nose. The same phenomena occurred in a case reported by du Moulin.* B. Fränkel† has lately put on record a case of compression of both sympathetic nerves and of both vagi by a large glandular swelling in the neck, in which the vasomotor and oculo-pupillary fibres were incompletely paralysed. Compression of the sympathetic is also sometimes caused by aneurism of the aorta, of the innominate arteries, and of the carotid: such cases have been observed by Gairdner, Coates, and others, and in one of them the contraction of the pupil disappeared after ligature of the carotid.

Those causes which bring about a state of paralysis in the sympathetic may also produce a condition of irritation, together with all the phenomena dependent on such a condition; and according as only the oculo-pupillary, or also the vasomotor fibres, are irritated, we have dilatation of the pupil alone, or also pallor and a decrease of temperature on the corresponding side. Ogle‡ has published several such cases, especially one communicated to him by Kidd, which is interesting on account of the varying character of the phenomena—at one time those of irritation, at another those of paralysis. It was a case of acute abscess in the neck in which, simultaneously with the formation of pus, and accompanied by acute pain and shiverings, there was an extreme degree of *dilatation of the pupil*, which disappeared after the patient had had a quiet sleep. On the following day the shiverings were renewed, and accompanied by *contraction* of the pupil: this was succeeded by a paroxysm of pain, in which, as at first, the pupil became *dilated*. The same variations were repeatedly observed; and when the abscess had been opened, and was progressing towards cure, the pupil assumed its normal dimensions. In the following year the lady had another abscess in the same region, and in the year after that a third, more deeply situated in the tissues, and all accompanied, but to a less degree, by the same train of symptoms. The phenomena in this apparently complicated case are easily explained. The compression, occasioned by the inflammatory exudation and suppuration,

* Du Moulin, "Bulet. de la Soc. de Méd. de Gand.," 1872.

† Fränkel, "Berliner klinische Wochenschrift," 1875, No. 3.

‡ Ogle, "Med. Chir. Transactions," T. xli., p. 398.

acted first as a stimulant to the pupillary fibres of the sympathetic, hence the mydriasis; on returning, or on being increased in intensity, this compression had the effect of a force which lessens conducting power—thus causing myosis. Possibly also the rigors may be traced to an occasional abnormal excitation of the vasomotor filaments in the cervical sympathetic. When the bloodvessels of one side of the head contract, less blood flows to the medulla oblongata; this temporary anæmia stimulates its vasomotor nerve-centres, by which means the phenomena attending rigors (contraction of the smallest arteries of the skin) are developed.

H. Demme* noticed mydriasis and slight exophthalmos in a man suffering from cystic goître. At the examination *the cervical part of the sympathetic on the left side was found abnormally red*, and surrounded by a serous exudation in the connective tissue. No changes were found on microscopic examination. Clearly the swelling here had irritated the oculo-pupillary fibres of the sympathetic. We have met with a very similar case—that of a patient suffering from a vascular goître almost entirely confined to the right side. The symptoms were extreme mydriasis, complete immobility of the iris, considerable exophthalmos, and loss of accommodation power, in the right eye; in addition to these there was a persistent lowering of the temperature of the auditory meatus of the same side, amounting to $0.3-0.4^{\circ}$ C. compared with the healthy side. The pulse was much accelerated. Calabar bean effected a temporary improvement in the mydriasis and the accommodative paralysis; local galvanopuncture, also, was followed by a slight decrease in the size of the tumour and in the frequency of the pulse.

We have thus cited instances, first of paralysis, then of irritation, of the sympathetic, brought on by the pressure of tumours. In both groups the phenomena in the domain of the oculo-pupillary fibres (myosis, connected with paralysis, and mydriasis with irritation) are of a constant and persistent nature, while in the domain of the vasomotor fibres (reddening or pallor) they are inconstant and transient; the reasons for this are yet unknown. Vulpian† supposes that there are vasomotor symptoms in every case of affection of the sympathetic, but only at the beginning; that they sometimes disappear in a few days, or even hours. If such

* Demme, "Würzburger med. Zeitschrift," 1862, Bd. iii., p. 262 and 269.

† Vulpian, "Leçons sur l'appareil vasomoteur." Paris, 1875, p. 142.

patients come under medical observation only at a later period, the vasomotor symptoms may no longer be recognisable, and this, thinks Vulpian, has led to the erroneous conclusion that these symptoms are frequently entirely wanting. There are many considerations in favour of such a view; we would also add that the vasomotor symptoms, when they have disappeared, may periodically reappear.

B. *Injuries to the Cervical Sympathetic*.—The number of exact observations bearing on this point is very small; there are, especially, almost no recorded cases in which we can assume with confidence the existence of a direct, uncomplicated injury, confined to the cervical part of the trunk of the sympathetic.

We will first allude to the following case, which has been published by three American practitioners (Weir Mitchell, Morehouse, and Keen) in their interesting monograph on injuries of nerves.* It was a case of *gunshot wound of the right sympathetic*. The ball had entered on the right side of the neck, 4 centimeters behind the ramus of the jaw, at the anterior margin of the sterno-mastoid muscle; it had passed through the neck, and emerged immediately below, and about $1\frac{1}{3}$ centimeter in front of the angle of the jaw on the left side. The wounds were healed in six weeks, but it was only at the end of ten weeks that the patient came under the observation of these writers, though a comrade of the wounded man had already noticed *the unusually small size of the right pupil* one month after the injury. Besides this, when the patient was first seen, there were observed in the *right eye myopia, slight ptosis, apparent sinking of the outer angle, decrease in the apparent size of the eyeball, and redness of the conjunctiva*. Further, it was repeatedly noticed that, after violent exercise, *the right half of the face was unusually red*, while the left side remained pale; this was accompanied by pain and reddish flashes of light in the right eye. When the temperature was taken after the patient had rested, there was found to be no difference in the mouth and ear on both sides; no observation was made when the patient was excited by exertion. He was able to return to service five months after receiving the injury.

This case, while it probably indicates bruising (or laceration?) of the right sympathetic by the projectile, gives rise to several remarks regarding the symptoms. We find in it

* S. Weir Mitchell, George R. Morehouse, and William Keen—"Gunshot Wounds and other Injuries of Nerves." Philadelphia, 1864.

nothing which does not receive a sufficient explanation in the results of experimentally injuring the sympathetic in animals and from other pathological observations in men. The ptosis, the sinking of the outer angle of the eye, the apparent small size of the right eyeball, all arise from loss of power in certain of the muscles of the eye, which have their nerve-supply from the cervical sympathetic, and whose special functions we have already discussed. The reddening of the conjunctiva and the flow of tears depend on functional derangement of vasomotor nerve fibres which pass from the sympathetic to the first of the branches of the trigeminus, and which supply the conjunctival vessels: paralysis of these is followed by partial relaxation of the vessels, and increase in the flow of blood and of the conjunctival mucous secretion. The altered refractive power of the eyeball, the myopia, is, in the first place, the necessary consequence of the persistent paralytic myosis, and, secondly, may be regarded as produced by the presumed direct influence of the sympathetic on the muscle of accommodation (M. tensor choroidea), or on detached fibres of that muscle.

Alongside of this case may be put one of Kämpf's.* He brought before the Society of Physicians in Vienna a soldier with myosis paralytica in the right eye, following *a wound of the cervical part of the sympathetic of the same side*. This soldier, in the battle of Orleans, received a stab in the right side of the neck, the direction of which was clearly marked by a cicatrix lying on the outer edge of the sterno-mastoid muscle. The myosis, evidently due to paralysis of the fibres of the sympathetic and to the preponderating influence of the sphincter iridis, was in no way improved by the repeated employment of electricity. Kämpf's communication contains no further reference to anomalies in the domain of the cervical sympathetic.

Here, also, should be mentioned a case recorded by Seeligmüller,† in which, as the result of a *gunshot wound*, there was *paralysis of the left cervical sympathetic*, and of the ulnar nerve. During the Franco-Prussian war an officer, twenty-five years of age, was wounded in the left shoulder by a chassepot bullet. The orifice of entrance was on the clavicular portion of the left sterno-mastoid muscle, 3 centimeters above the upper edge of the collar bone; the orifice

* Kämpf, Sitzung der K. K. Gesellschaft der Aerzte in Wienam, 8 März. 1872.

† Seeligmüller, "Berliner klin. Wochenschrift," 1872, No 4.

of exit was to the left of and close to the spinous process of the fourth dorsal vertebra: the first was cicatrized in six weeks, and the latter in eleven. Nine months after receiving the wound, the following appearances were noted: the left palpebral fissure was smaller than the right; the left pupil more contracted than the right, and dilating to a less degree when shaded; injection of the vessels of the conjunctiva and redness of the cheeks, usually equal on both sides, but sometimes more marked on the left side after mental disturbance; the temperature in the left auditory meatus 0.1° C. higher than in the right; a flow of tears from the eyes; *striking emaciation of the left cheek, which appeared flatter than the right*; besides all this a paralysis of the ulnar nerve.

The flattening and emaciation of one side of the face observed in this case, which also occurred in some others to be mentioned further on, appear to occur more frequently at a later stage in paralysis of the sympathetic. At least, Nicati* states, as the result of some original investigations, that to the first stage of the paralysis a second succeeds, characterised by atrophy, pallor, lowering of temperature, and arrest of the transpiration, on one side of the face. We will again refer to this atrophy when discussing unilateral, progressive, facial atrophy, and its relations to lesions of the cervical sympathetic.

Continuing the argument regarding injuries of the sympathetic, we quote a case described by Bernhardt†. On the 4th day of August, 1870, in the war with France, a German soldier was wounded in the left side of the neck by a bullet. Two years after the injury there was rather a large cicatrix, painful on pressure, situated on the front of the neck, at the inner edge of the left sterno-mastoid muscle, and about two fingers'-breadth above the left sterno-clavicular articulation; this was the orifice of entrance of the bullet. The orifice of exit was behind, at the level of the fourth dorsal vertebra, and to the left of the spinous process; here, also, the scar was very tender.

Besides various phenomena depending on a simultaneous injury sustained by the spinal cord, and of which we need give no particular account here, there were the characteristic signs of *paralysis* of the sympathetic, clearly caused by *injury*. The left eye appeared smaller, and less widely open;

* Nicati, "La Paralysie du nerf sympathique cervical." Lausanne, 1873.

† Bernhardt, "Berliner klin. Wochenschrift," 1872, No. 47 and 48.

the left pupil more contracted, and acting more sluggishly, than the right. The left side of the face was more emaciated, at times redder, and always warmer, than the right. Lachrymation was more easily excited in the left eye, and the temperature in the left auditory meatus was $1\frac{1}{2}^{\circ}$ C. higher than in the right.

Occasionally, though rarely, one meets with the same symptoms resulting from injury that are observed to follow experimental *irritation* of the cervical sympathetic. Seeligmüller* has described such a case. A smith sustained a very severe blow with an iron implement in the left supra-clavicular region, so that he lay stunned several hours. Two days later, on coming under medical treatment, it was seen that the left pupil was much dilated, at least one half wider than the right, but still responding quite as readily to the stimulation of light. The left palpebral fissure was somewhat wider than the right, and the left eyeball pushed a little forward. The whole left side of the neck and head (the latter being bald) and the left ear were markedly paler than the corresponding regions on the right side. Pulsation in the right temporal artery was well marked, that on the left scarcely perceptible. The temperature in the left auditory meatus was lower than in the right, the difference sometimes amounting to $0.15-0.9^{\circ}$ C. In the left supra-clavicular region was a doughy swelling, which disappeared in a short time. The cervical part of the sympathetic at the inner edge of the sterno-mastoid muscle was, from its middle to the ganglion supremum, very tender. On exercising pressure on the ganglion, and on galvanic irritation of the left sympathetic, the pupil became still more dilated, while pressure on the right sympathetic gave no result. Refraction and accommodation in the left eye remained normal, which proves that the dilatation of the pupil was caused by irritation of the sympathetic, and not by paralysis of the oculomotorius. In about five weeks all the symptoms had passed off, the vasomotor phenomena having lasted only a few days.

A second case, having a bearing on this part of our subject, was reported, in Flensburg, in 1864. In the war with Denmark at that time a soldier was wounded in the neck by a rifle bullet, and immediately afterwards there was decided dilatation of one pupil. Whether, in this case (of which we

* Seeligmüller, "Archiv. für Psychiatrie und Nervenkrankheiten," 1875, Bd. v., p. 835.

have received but a very imperfect report), there were other appearances indicating a state of irritation of the sympathetic, we do not know. The patient died of exhaustion, after prolonged suppuration; at the post-mortem examination it was impossible to find the sympathetic on account of the great destruction of soft parts in the neck.

C. *Injury to the Spinal Cord in the Neck and to the Brachial Plexus.*—Disturbances of function in the domain of the cervical sympathetic, associated with injuries of the cervical part of the spinal cord possess no special or peculiar character, as both the oculo-pupillary and vasomotor nerve filaments run some distance in that part of the spinal cord, leaving it through the anterior roots and the rami communicantes, and so passing over to the trunk of the cervical sympathetic. As in cases in which the cervical sympathetic itself is wounded, so after injury of the spinal cord in the neck myosis paralytica is often met with, from an interruption (of traumatic origin) of the conducting power of the oculo-pupillary fibres in the medullary part of their course: more rarely this is followed by irritative dilatation of the pupil—mydriasis spastica. The number of observations relating to this point is indeed few, as, in most recorded cases of injury of the spinal cord in the neck, the pupillary symptoms and the local disturbances of the circulation have received no special attention. In about one hundred cases of such injury Rendu* found but sixteen in which notice was taken of the state of the pupil. He has published two of Desormeaux' cases in which, coincident with injury of the spinal cord in the neck, there were various changes in the pupil. In the first case the spinal cord was completely disorganised by dislocation of the sixth cervical vertebra: during life both pupils were greatly contracted, the face and neck of a purplish red hue, the ears very red, while there was no change in the colour of the rest of the body. Thus, in this case, the vasomotor fibres for the vessels of the head were also probably paralysed. In the second case there was hæmorrhagic softening of the spinal cord at the level of the seventh cervical vertebra, produced by fracture in that situation; the patient showed great pallor, *one pupil widely dilated*, and the other somewhat contracted. Here the irritative phenomena seem to

* Rendu, des troubles fonctionnels du grand sympathique, observés dans les plaies de la Moëlle cervicale. "Archiv. gen. de méd.," 1869, Sept., p. 286-297.

have predominated, as may be inferred from the facial pallor and the mydriasis.

In one case of injury of the spinal cord, by a fracture of the seventh cervical vertebra, Hutchinson* observed contraction of the pupil—a symptom which was wanting in two otherwise similar cases.—Finally, we quote a case of injury of the spinal cord, recorded by M. Rosenthal,† which occurred in the person of a tradesman who had been stabbed in the neck, in the neighbourhood of the sixth cervical vertebra. Besides paralysis of the upper and lower limbs of the right side, he found *dilatation of both pupils*, especially of the left, and *a strikingly slow pulse* (48 per minute), which phenomena lasted four weeks. The patient eventually completely recovered. Here, as in the second of Rendu's cases, mentioned above, there existed a condition of irritation in the pupillary filaments of the sympathetic, accompanied also by a similar affection of the cardiac fibres of the vagus.

Paralytic myosis occurs not uncommonly, also, in non-traumatic diseases of the cervical portion of the spinal marrow, when the oculo-pupillary fibres are affected. Thus, Ogle has observed contraction of the pupil in five cases of disease of the spinal cord in the neck; and lately Bäerwinkel‡ has described paralysis of the oculo-pupillary sympathetic fibres as a symptom in sclerosis of the medulla oblongata. In certain forms of tabes dorsalis, especially in that called tabes cervicalis by Remak, contraction of the pupil, on one or both sides, is a very characteristic symptom. It has been shown that paralysis of the oculo-pupillary filaments takes place in some cases of progressive muscular atrophy: to this we will again refer. On the other hand, it happens less frequently that irritative phenomena (such as dilatation of the pupil) result from non-traumatic affections of the spinal marrow in the neck. We ourselves have met with a case of that nature—mydriasis spastica from caries of the vertebræ. The patient was a boy of eight years, suffering from Potts' disease of the last cervical and three upper dorsal vertebræ. The right pupil was always wider than the left, and responded but very feebly to the stimulus of light, while the left still preserved its normal sensibility. The diameter of the right pupil was $3\frac{1}{2}$ lines, that of the left only 2 lines. The degree of mydriasis present was not the greatest pos-

* Hutchinson, "Lancet," 1875, 21 and 29 May.

† M. Rosenthal, "Oesterr. Zeitschrift für pract. Heilkunde," 1866, No. 46.

‡ Bäerwinkel, "Archiv. für klin. Medicin," Band xiv., p. 545.

sible, as instillation of atropine dilated the left pupil to the extent of more than 4 lines; the immobility of the pupil, also, was not complete, as a very powerful light still produced a slight contraction. A low degree of hypermetropia was found on both sides, especially the right; accommodation and definition were normal. No constant or important differences in the action of the vasomotor nerves of the two sides of the head could be recognised. On ophthalmoscopic examination it was found that in the fundus of the eye, otherwise normal, there was a complete equality in the size of the arteries and veins. The spastic mydriasis remained about four weeks, and then gradually disappeared. When the patient was dismissed, after three months' treatment, both pupils were again nearly equal, the right, however, acting more sluggishly than the left.

The cause of the mydriasis in this case can be sought only in a morbid change in the spinal cord and its immediate surroundings, and consequent irritation of the pupillary sympathetic fibres; it is to be looked for particularly in the inflammatory processes in the bodies of the vertebræ, involving just those vertebræ (the lower cervical and upper dorsal) which correspond to the centrum ciliospinale inferius. Whether it is from simple compression, or from inflammation going on in the cord and its membranes, with thickening of the latter, and with circumscribed softening, are questions which must remain undecided.

Hutchinson* first observed also that in cases of *traumatic paralysis of the brachial plexus* there is usually a simultaneous *paralysis of the cervical sympathetic*, manifesting itself by myosis with loss of mobility of the pupil, by narrowing of the palpebral fissure, and by a rise in the temperature of the corresponding side of the face. Seeligmüller† afterwards confirmed Hutchinson's statements. Two instructive cases of traumatic paralysis of the brachial plexus with functional disturbances, especially in the domain of the oculo-pupillary fibres, of the cervical sympathetic came under his observation. In the first case, that of a child aged nine months, who had sustained a fracture of the clavicle and of the neck of the scapula in the act of birth, there was complete paralysis of motion and sensation in the right forearm; there were, moreover, some differences observable in the eyes. Much

* Hutchinson, "Med. Times and Gaz." 1868, p. 584.

† Seeligmüller, "Ueber Sympathicus-Affectionen bei Verletzung des Plexus brachialis," Berl. klin. Wochenschrift, 1870. No. 26.

less of the eyeball was seen through the palpebral fissure on the right side than on the left, in consequence of a marked difference in the vertical diameter of these fissures; the right pupil was at least one half smaller than the left, and was on some days contracted to the size of a pin's head, but still acting normally under the influence of light and shade. With respect to the colour and temperature of the skin, the two sides of the face were alike, but in the course of the disease a slight but perceptible atrophy of the right side of the face presented itself. The paralysis improved under the use of electricity; after three months the right pupil, too, was not so contracted as formerly, but with that exception the state of the pupils and of the atrophied parts remained unchanged. The second case was that of a man of 34 years, who was run over by a railway waggon, sustaining an injury to the left breast and shoulder, and fracture of the left forearm. Three months afterwards there were paralysis and emaciation of the left arm, with considerable disturbances of nutrition, and complete anæsthesia of the whole forearm. The left pupil was only half as widely dilated as the right, but quite sensitive to light, and the palpebral fissure on that side was only a very little shorter than that on the right. On instillation of atropine the contracted pupil became dilated almost as widely as possible, and in the following 48 hours contracted but slightly, though the paper prepared with Calabar bean was used. Galvanic irritation of the cervical sympathetic, though repeatedly tried, was followed only once by a transient dilatation of the pupil; whilst under this treatment, however, the left ear was usually warmer to the touch than the right, a sensation which was felt by the patient himself. He was a long time under observation, but the differences between the pupils remained unchanged.

The phenomena in the two last-mentioned cases correspond to a paralysed condition of the cervical sympathetic, but only in the sphere of the oculo-pupillary fibres, whilst the vasomotor fibres appear to be quite unaffected. Whether the trunk of the sympathetic itself, or the middle cervical ganglion, or the twigs passing from that ganglion to the brachial plexus, were injured, remains unknown.

Further, Bäerwinkel,* in two cases of traumatic paralysis of the brachial plexus, (produced, in one instance, by fracture

* Bäerwinkel, "Zur Pathologie des Sympathicus." *Deutsches Archiv. für klinische Medicin.* Bd. xiv., p. 545.

of the clavicle, in the other by a gunshot wound), observed paralysis of the oculo-pupillary sympathetic filaments, indicated by narrowing of the palpebral fissure, ptosis, and contraction of the pupil.

As far as we know there are no other published cases of the occurrence of paralysis of the sympathetic attendant on traumatic paralysis of the brachial plexus. Hutchinson errs in stating that this coincidental relation is *invariable*. We ourselves have, with this point in view, examined a considerable number of isolated, usually traumatic, cases of paralysis of the brachial plexus, both recent and of long standing, but without finding any trace of paralysis of the cervical sympathetic.

There may be disturbances of function in the cervical sympathetic which are not referable to any of the causes already mentioned, and these may appear in the domain of the sympathetic alone, and not in connection with any other complaint. In such cases also, as we formerly stated, the paralytic condition is more common than the irritative, and the oculo-pupillary fibres are more frequently and more persistently affected than the vasomotor fibres.

Several cases in point will be mentioned in the next section.

II.—UNILATERAL HYPERIDROSIS.

Among the symptoms following division of the sympathetic there is sometimes, as Cl. Bernard has stated with reference to horses, an abnormally profuse secretion of perspiration on the side of the head operated on. This has also been observed in the human subject in paralysis of the cervical sympathetic, and sometimes to such a degree that it was regarded as the principal symptom, and, as such, first attracted the patient's attention to his condition. Different cases of paralysis of the sympathetic, in which this was the predominating symptom, have been described under the special name Hyperidrosis or Ephidrosis unilateralis. On the other hand, cases of unilateral secretion of perspiration have been recorded, some being confined to one side of the head, some extending over greater part of one side of the body, but in which other indications pointing to disorder of the sympathetic were entirely wanting. Setting aside some very old observations on this point, which have been brought together in a work by Nitzelnadel,* the above statements refer

* Nitzelnadel, "Ueber nervöse Hyperidrosis und Anidrosis," Jena, 1867, Inaug. Dissert.

specially to the more modern contributions of Meschede,* Berger,† Wiedemeister,‡ and others. Cases of Ephidrosis, however, which are with certainty known to be dependent on paralysis of the sympathetic, are rare. Verneuil and Ogle met with some, quoted in the former part of this work. Otto§ and Nitzelnadel|| mention one such, Bäerwinkel¶ several. Kulz** describes two cases of Ephidrosis accompanying diabetes mellitus, though only the vasothermic, and not the oculo-pupillary, phenomena were present. Very aggravated cases, in which, besides the hyperidrosis, the other symptoms of paralysis of the sympathetic were unmistakably manifested, have been observed by Chvostek,†† Pokroffsky,‡‡ and ourselves. Our case was that of a man 44 years of age, who, after even very moderate exercise, perspired profusely on the left side of the face, and occasionally also on the left side of the throat and neck. Simultaneously with the breaking out of the perspiration the left side of the face and the left ear became red, and the temperature in the left external auditory meatus rose several tenths C. above that in the right. There was also considerable injection in the vessels of the left conjunctiva, while lachrymation was sometimes more easily excited in the left eye than in the right. The left pupil was constantly more dilated than the right, but responded to the stimulus of light. Accommodation remained normal, and there was no interference with nutrition. In the neighbourhood of the left cervical sympathetic there was some tenderness on pressure, perhaps the indication of a state of chronic inflammation of that nerve. It is worthy of note in this case that, while the vasomotor fibres were in a state of paralysis the pupillary fibres were in a condition of irritation.

Only two opportunities have presented themselves for investigating the nature of the pathological changes which take place in sympathetic hyperidrosis. In one case, Seguin¶¶ found no difference between the cervical sympathetic

* Meschede, "Virchow's Archiv," Bd. xliii., p. 139.

† Berger, "Virchow's Archiv," li., p. 427.

‡ Wiedemeister, "Virchow's Archiv." Bd. lii., p. 437.

§ Otto, "Archiv. für klin. Medicin." Band xi., Heft 6.

|| Nitzelnadel, L. c.

¶ Bäerwinkel, "Archiv. für klin. Medicin," 1874. Bd. xiv., p. 550.

** Kulz, "Beiträge Zur Pathologie und Therapie des Diabetes," 1874, pp. 23 and 27.

†† Chvostek, "Wiener med. Wochenschrift," 1872. No. 19 and 20.

‡‡ Pokroffsky, "Berliner klin. Wochenschrift," 1875. No. 13.

¶¶ Seguin, "American Journal of Medical Sciences," Oct., 1872.

nerves of the right and left sides. The ganglionic cells seemed to be filled with an unusually abundant granular pigment, but this was equal on both sides. To the naked eye also they were alike. Ebstein* has recorded the case of a man, 60 years of age, who suffered from hyperidrosis of the left side, which appeared suddenly after a paroxysm of angina pectoris, and subsequently invariably accompanied each attack. On examination with the unaided eye no change was found in the sympathetic or its ganglia; but microscopic examination of thin sections of the ganglia of the *left* sympathetic revealed the presence of extremely varicose and dilated vessels, while on the right side no trace of such a structure was found. On the basis supplied by this discovery Ebstein explains hyperidrosis. He believes that these varicosities receive, at different times, a blood supply of varying amount. When the quantity is abnormally great, some of the sympathetic nerve elements must be temporarily compressed, and so paralysed—exactly as, in very vascular new formations in the brain, various paralytic phenomena occur in different parts of the nervous system, all of which disappear when the quantity of blood in circulation is reduced.

III.—HEMICRANIA.

Our conception of the proper nosological position of Hemicrania was, till lately, very obscure. Old authors (as Wepper, Tissot) have identified the disease with Prosopalgia, especially that form occurring as supra-orbital neuralgia; and Schönlein, who classifies hemicrania among the neuroses of the genital system, calling it "*Hysteria Cephalica*," places the seat of pain in the ramifications of the frontal and temporal nerves. Even at the present time there are not wanting pathologists (Lebert, Stokes, Anstie, Clifford Albutt) who look upon hemicrania as a simple neuralgia, affecting the first division of the trigeminus. Believing in this doctrine many men have somewhat arbitrarily distinguished between various forms of hemicrania, according to the presumed or actual causes giving rise to it. Thus, Sauvages speaks of ten varieties of hemicrania, and Pelletan of "*Migraine stomacale, irienne, utérine, pléthorique*." Monneret and Fleury recognise "*Migraine idiopathique*" and "*sympathique*," a classification which is adopted also by Valleix. An important step was taken by Romberg when

* Ebstein, "*Virchow's Archiv.*," 1875. Bd. lxii, p. 435.

he associated hemicrania with the "Hyperæsthesiæ of the brain," with painful affections of the brain, thus defining it sharply from the peripheral neuralgias, calling it "Neuralgia cerebialis." Later pathologists took the same view; thus Leubuscher calls hemicrania *the* neuralgia of the brain. The fact that we are able to localise the seat of the pain in the brain, or in the parts of it endowed with sensation, does not much advance our knowledge of the pathogeny of the disease, and Romberg's conception of hemicrania as one of the cerebral neuroses is open to the same objection. Romberg was, as it appears, specially led to that conclusion by the sympathetic connections existing between the trigeminus and the nerves of special sense, and by the favourable effect produced by physical and mental exercise. But Hasse has remarked, with justice, that deciding according to the analogies offered by other neuralgias, the sympathetic connection of several cranial nerves, and the reflex phenomena resulting therefrom, give no ground for assuming the ramifications of the trigeminus within the cranium as the seat of the disease.

Sixteen years ago Du Bois-Reymond,* from personal observation, inferred that his migraine was caused by *tetanus of the muscular coat of the vessels on the affected side of the head*, or, in other words, *tetanus in the region supplied by the cervical part of the (right) sympathetic nerve*. He found that during the attack the temporal artery of the painful side was hard and cord-like to the touch, while that on the left side was in its normal state. The face was pale and sunken; the right eye small and injected. The pain was increased by everything which raised the blood-pressure in the head (as stooping, coughing, &c.), this increase being synchronous with the pulse in the temporal artery. Towards the end of the attack the right ear became warm and red. These phenomena, the state of the temporal artery, the bloodlessness of the face, the sunken appearance of the right eye, show that the muscular coat of the vessels of the affected side of the head was persistently contracted. On removal of the cause which produces this condition of tonic spasm, relaxation follows the overaction of the unstriated muscular fibres, and the walls of the vessels yield more than usually to the lateral pressure. This secondary relaxation explains the congestion of the conjunctiva, and the redness and in-

* Du Bois-Reymond, "Zur Kenntniss der Hemikranie, Archiv. für Anat. und Phys.," 1860, p. 461-468.

creased temperature of the ear, which occur when the violence of the attack begins to subside. The vomiting and the flashes of light before the eyes which frequently accompany hemicrania are caused by sudden changes in the intracerebral blood-pressure; and these variations obviously correspond to the irregular contraction and relaxation of the unstriated muscular coat of the vessels.

Such a pre-supposed tonic vascular spasm of one side of the head can, as we know from physiological facts, have its origin only in the sympathetic nerve of the same side, or in the medullary centre of the sympathetic fibres involved; that is, in the corresponding half of the regio ciliospinalis of the spinal cord. Hemicrania is thus to be regarded, not as a neuralgia of peripheral nerves or of the brain, and generally not as a primary cerebral disease, but as an affection of the cervical sympathetic nerve, or of a certain part of the spinal cord. This apparently rash assertion receives strong support from a further observation by du Bois-Reymond. He noticed, in the course of the attack, *a dilatation of the pupil on the affected side*. A medical visitor confirmed this observation: and the more shaded the eyes were, the more decided was the difference in the size of the pupils, exactly as in tetanus of the cervical part of the sympathetic. Latterly, during and after the attack, the spinous processes corresponding to the regio ciliospinalis were painful to pressure.

Whether, at the end of the paroxysm, there was decrease in the size of the pupil in conjunction with the elevation of temperature and the redness, was not stated; but in several instances, otherwise identical in type with that quoted, we have observed a decided contraction of the pupil on the affected side of the head as the attack was passing off. Brunner* remarked in his own case, besides the symptoms mentioned by du Bois-Reymond, pain on pressure in the neighbourhood of the upper, and sometimes also of the middle cervical ganglion. This tenderness disappeared slowly, usually on the following day, and palpitation of the heart and acceleration of the pulse were frequently observed at the close of an attack.

Brunner noticed the same symptoms also in the case of his mother. We ourselves and some other authors have seen, in several analogous cases of migraine, a more or less considerable increase in the quantity and tenacity of the saliva.

* Brunner, "Zur Casuistik der Pathologie des Sympathicus." Petersburger med. Zeitschrift, N. T. Bd. ii., 1871, p. 260.

In one case, Berger* found that two pounds of tough saliva had been discharged. This symptom, also, is to be classified with those already mentioned, since secretory fibres for the salivary glands are included in the cervical sympathetic, and irritation of these in animals produces similar effects. The question arises, in what relation the tetanus of the region supplied by the right sympathetic stands to the hemicranial pain, whether it is only a concomitant symptom, or the cause of the migraine, that is, of the paroxysmal attacks of pain. With regard to this, du Bois-Reymond has suggested that the state of tonic spasm of the unstriated muscles of the vessels may itself be that which causes the pain: just as it is felt in striped muscular fibre, in cramp of the calf of the leg, and in tetanus; or in unstriated muscular fibre, in the uterus during labour-pains, in the intestines during an attack of colic, and in the skin during rigors. Probably this pain comes from pressure on the nerves of sensation distributed within the muscular tissue; this pressure, and consequently the pain, will be augmented when the tetanic muscles are more strongly exerted, as, for instance, in the case of cramp in the calf when the muscles are extended, either by means of the antagonistic muscles, or by the weight of the body, the ball of the foot being supported. This also is produced in tetanus of the muscular coat of the vessels when the lateral blood-pressure is increased. Thus a reasonable explanation is found for the observation that pain is increased along with the blood-pressure, and synchronously with the pulsations of the temporal artery.

Besides du Bois-Reymond's explanation of the pain, another one appears to us worthy of mention, being perhaps more probable and less forced. In the variations in the flow of arterial blood, especially in the temporary anæmia of the affected side of the head, a shock may be given which irritates the sensory nerves of the head, whether those in the skin, the pericranium, the membranes of the brain, the sensitive parts of the brain itself, or in all these at once, and thus causes the hemicranial pain. Sensory nerves are brought into a state of great excitement by changes in the diameter of the accompanying and surrounding bloodvessels, especially when these changes occur with a certain degree of suddenness. This condition is met with in very different cases of neuralgia, as in facial neuralgia and sciatica, &c.

* Berger, "Zur Pathogenese der Hemicranie." Virchow's Archiv, lix., Heft 3 and 4, 1874.

Those neuralgias, also, which usually follow herpes zoster—which occur most commonly in the body, but sometimes in the face and extremities—are very probably to be referred to this source. Anomalies of the circulation generally, and anæmia specially, have been long ago recognised as important causes of neuralgic affections in different parts of the body. The aggravation of the hemicranial pain in stooping, coughing, &c., and the peculiar effect of compressing the carotid, originate in this way. In many cases of migraine the pain ceases on compressing the carotid on the painful side, but is increased by compression of the carotid on the sound side. In one case, however, we observed the opposite—that the pain became decidedly worse on exercising pressure on the carotid of the same (the right) side, while compression on the left side at once alleviated it. This case strikingly demonstrates the good effects of local anæmia. Probably the direct cause of migraine is to be found in the local alterations in the circulation, while the state of the muscular coat of the vessels, being the most common cause of these variations, can be regarded as playing only a secondary part in the origination of the affection. The inequality and inconstancy of the pupillary and vasomotor phenomena are strongly in favour of this view.

The objection raised by Brown-Séquard* and Althann† against du Bois-Reymond's theory, that, according to the experiments of Kussmaul and Tenner, the occurrence of epileptic convulsions should be expected in unilateral vascular tetanus in the brain, is not defensible, since it is proved, both by the formerly-quoted experiments of Fischer, and by those performed by ourselves, that in unilateral experimental irritation of the cervical sympathetic convulsions do not occur, but always contraction of the vessels and lowering of the temperature on one side. The same symptoms occur also in pathological cases of unquestionable (mechanical) irritation of the sympathetic in men, as has already been in part described in the foregoing section. That there is a certain genetic relation existing between migraine and epilepsy is beyond a doubt; suffice it to state that in hereditarily and constitutionally predisposed epileptics migraine is one of the most frequent accompanying symptoms, both in early life

* Brown-Séquard, "De l'hémicranie ou migraine, par le Dr. du Bois-Reymond," *Journal de Phys.* 1861.

† Althann, "Beiträge zur Physiologie und Pathologie der Circulation," *Dorpat*, 1871.

and afterwards with fully-developed epilepsy, and that in families prone to be affected with constitutional neurophatic complaints some members often suffer from migraine, others from epilepsy, and various affections belonging to the same group.

Du Bois-Reymond has remarked that by no means all cases of migraine present the above-mentioned symptoms during the attack; that especially the difference in the size of the pupils in many otherwise very pronounced cases of periodic unilateral headache is not observed. He has therefore proposed the name *Hemicrania Sympathico-tonica* for those cases resembling his own, in which one may assume the existence of tetanus in the cervical part of the sympathetic as a patho-genetic force. More recently, Möllendorff,* apparently without any knowledge of du Bois-Reymond's paper, has set up a theory of migraine which really amounts to this—that hemicrania is due to a unilateral loss of energy in the vaso-motor nerves governing the carotid artery, whereby the vessels are *relaxed*, and permit of an increased flow of arterial blood towards the head. In the case recorded by Möllendorff the rate of the pulse was reduced to 56—48 per minute, the radial arteries were small and contracted, and the pulse in the carotid and temporal arteries of the painful side was soft and wavy. Compression of the carotid of the affected side during the attack instantaneously dissipated the pain, which returned with the first beat of the pulse on slackening the pressure. On the other hand, the pain was aggravated by pressure on the carotid of the other (sound) side.

Ophthalmoscopic examination of the eye on the painful side, in a patient suffering from migraine, showed during the attack dilatation of the central vessels, the art. and vena centralis retinae, the latter being knotted and convoluted, and of much darker colour than usual; the choroidal vessels also were enlarged, so that the fundus of the eye was of a bright scarlet colour instead of its usual dark-brownish red. Sometimes there was considerable injection of the episcleral vessels as far forward as the edge of the cornea, disappearing on subsidence of the attack. The fundus of the other eye was normal, the art. and vena centralis having their usual appearance. It is, unfortunately, not stated at what stage of the attack the examination was made, though probably it was towards the end. In a similar case Berger and H. Cohn

* Möllendorff, "Ueber Hemicranie," Virchow's "Archiv. für path. Anat." Bd. xli, p. 385-395.

found the fundus of the eye normal. In several analogous cases of migraine we ourselves observed a more or less marked *contraction of the pupil*, sometimes a diminution in the size of the palpebral fissures, retraction of the globe of the eye, partial ptosis in, and difficulty of moving, the upper lid. The ear on the same side was red and hot, and the temperature in the external auditory meatus was raised $0.2-0.4^{\circ}$ C. The secretions of the skin were increased, and sometimes epidrosis unilateralis occurred.

It thus follows that there are cases of hemicrania which are entirely opposed in character to that of du Bois-Reymond—that is, in which the striking symptoms are not those of *spasm* in the vessels, of arterial tetanus in the parts supplied by the cervical sympathetic, but those of *relaxation* of the vessels, of arterial hyperæmia caused by a loss of energy in the vasomotor nerves. These are cases that one might designate *Hemicrania Neuroparalytica*, or *angioparalytica*, as opposed to du Bois-Reymond's *H. Sympathico-tonica*. In such circumstances the occurrence of the pain can certainly not be explained in the same way as in the former class of cases.

Our interpretation of the phenomena, however, is applicable here, as the temporary increase of the blood-pressure, the greater quantity of blood in the small arteries and veins, gives rise, by irritation and compression of the nerve elements, to the pathognomonic symptoms of hemicrania in exactly the same way as in the opposite case—arterial anæmia and decreased blood-supply from spasm in the vessels. We know, further, from other sources, that increased or diminished blood-supply, anæmia or hyperæmia, agree closely in their action on the brain; that, for instance, epileptic seizures take place both in anæmia of the brain (according to the Kussmaul-Tenner experiments) and in hyperæmia of the brain (through retardation of the return of venous blood by closure of the vena cava superior *), and that the effect on the action of the heart and the frequency of the pulse is quite analogous in both conditions. †

The lowering of the rate of the pulse, which Möllendorff does not explain, has been noticed by Landois in hyperæmia of the brain and medulla oblongata, produced artificially by compressing the superior vena cava; he has observed it also after extirpating both cervical sympathetic

* Hermann und Escher, Pflüger's "Archiv. für Physiologie," 1870, p. 3.

† Landois, "Centralblatt für die med. Wissensch.," 1865. No. 44; 1867, No. 10.

nerves, but not when the spinal marrow had been previously destroyed or the vagi divided. This decrease in the frequency of the pulse, which, in congestion of the brain, may proceed to arrest of the heart's action, and may be complicated with epilepsy, is dependent on a *direct*, not a reflex, *irritation of the medulla oblongata and of the vagi*; division of the latter, whilst there is hyperæmic retardation of the pulse, is at once followed by acceleration of the pulse.

Since the centres for most of the vaso-motor nerves of the body are situate in the medulla oblongata, irritation of that important part of the nervous system furnishes a full explanation of the fact that the radial arteries are small and contracted in hemicrania, of the occurrence of icy coldness of the hands and feet and cold shiverings over the whole body, and of the suppression of perspiration during the paroxysm. The last-mentioned symptom, however, is often absent on the affected side of the head. This contraction of the peripheral arteries is followed by dilatation, by secondary relaxation. It may be this which gives rise to the augmentation of the secretion of saliva and urine occurring towards the end of an attack, and also to the swelling of the liver and hypersecretion of bile, to the gradually developed plethora of the abdominal organs, the tendency to bronchial catarrh and emphysema of the lungs, which, Möllendorff alleges, eventually appears in persons affected with hemicrania.

The views advanced by du Bois-Reymond and Möllendorff appear to us to be of some importance in the *therapeutics of hemicrania* but in a way quite different to that claimed for them by these authors. Du Bois-Reymond merely hints that in the form described by him remedial measures should be directed specially to the regio ciliospinalis. Möllendorff says absolutely nothing concerning local treatment; and yet it is specially to local measures, as opposed to the hitherto fruitless general treatment and empiricism, that we should look for most benefit. It is, further, on local experimental evidence that we found the doctrine that migraine is a periodically recurring neurose of the vessels of the head, an affection of the cervical sympathetic, or of the central origin of the vasomotor filaments of the vessels of the head—the regio ciliospinalis of the spinal cord. Bernatzik* ascribed the well-known effects of caffeine and quinine in cases of migraine, in the stage of relaxation which follows the primary spasm

* Bernatzik, "Wiener med. Presse," 1867. No. 28.

of the vessels, to decrease in the quantity of blood in the vessels of the brain; he represented the operation of these remedies as depending really on irritation of the vasomotor nerves, on increase of the arterial tone. It is possible that the above-mentioned remedies may be of special use in those cases of migraine that we distinguished as neuro-paralytic or angio-paralytic, in which, during the attack, the most prominent symptoms are those of relaxation of the vessels and of arterial hyperæmia.

We ourselves met with a case clearly belonging to the last category, in which quinine had a rapid and surprising effect. The case was that of a boy, eight years of age, who suffered from a daily attack of hemicrania in the left side of the head; it began usually about midnight, and lasted till the forenoon of the following day, gradually declining in intensity. The boy had previously recovered from what was said to be "Scarlatina sine exanthemate," and was, besides, affected with torticollis spasticus from contraction of the left sternomastoid muscle; no further etiological indications were found. Both sides of the face were usually the same in colour; at the height of the attack, however, the left side of the face and the left ear were of a deep red colour and (especially the ear) warm to the touch, while, on subsidence of the pain, this relation often appeared reversed. The upper part of the face, the forehead and orbital region, took no decided part in these changes, and no difference in the size of the pupils was observable. On the exhibition of 0·5 gramme of sulphate of quinine his usual nightly seizure did not occur, but returned next night as before. A second similar dose was followed, first by a slight relapse, and then by complete recovery, which has lasted till the present time, five months from the appearance of the last attack.

In accordance with the preceding view, another drug recommends itself for further trial in cases of the angio-paralytic variety of migraine—the *extractum secalis cornuti aquosum*—which, we know, causes contraction of the blood-vessels, an action which, according to Wernich, Holmes, Vogt, and others, probably takes place partly through the vasomotor nervous centra in the medulla oblongata. We ourselves, Berger, and others have used this remedy, which has already been highly praised by Woakes,† in cases of hemicrania that were decidedly of an angio-paralytic

† "British Med. Journal," 1868, vol. ii., p. 360.

character. We administered it both internally (0·6-0·9 gramme daily, in the form of pill) and subcutaneously, with very considerable relief to the symptoms.

Another remedy, lately employed for the first time, appears destined to play an important part in the treatment of cases of the sympathico-tonic variety of migraine—at least, as a palliative. This is *nitrite of amyl*, introduced by Guthrie in 1859. The indication for its use is based on the fact that it dilates the bloodvessels, whether by directly acting on their contractile elements (Richardson, Lauder Brunton, Wood, Pick), or by paralysing the vasomotor nervous system (Bernheim, Filehne), is still undecided. When inhaled, it provokes coughing, and occasions intense redness of the face, a sensation of heat in the face and head, and injection of the conjunctiva; it quickens the pulse by 20-30 beats per minute, lessening the tension in the radial artery. Further inhalation may even cause syncope. O. Berger* used it in a case of migraine of the sympathico-tonic type with an almost instantaneously successful result. The patient, an unmarried lady of 24 years of age, suffered many years from a migraine of the left side of the head, occurring regularly at the otherwise normal catamenial periods, and occasionally, also, in the intervals. The attacks usually began in the morning, reached their greatest intensity about dinner-time, and lasted with still considerable severity till late in the evening. There was also a feeling of exhaustion on the following day. During the attack the left side of the face was pale and sunken, the temporal artery very prominent, hard to the touch, and pulsating so strongly as to be almost audible to the patient. There were frequent shiverings over the whole body. There was no very evident reddening of the face or ear of the affected side, and the appearance was pretty much the same throughout the whole day. On the other hand, she noticed that now and then, in the intervals when she had no pain, sometimes without any assignable cause, and occasionally when emotionally affected, the left side of the face and the left ear became intensely red, contrasting with the colour of the right side. On inhaling five drops of the nitrite, the pain was as if charmed away. She first felt as if the blood were rising to her face, and had a certain confused sensation in the head, but the violent, boring pain of the migraine itself had disappeared. Vomiting did not occur. She was

* Berger, "Das Amylnitrit, ein neues Palliativmittel bei Hemikranie," *Berliner klin. Wochenschrift*, 1867. No. 2.

able to take dinner, but towards evening had to retire to rest, as she was in a not unpleasant state resembling intoxication. At this time she was strikingly pale, but showed no further evil after-effect, and next day was perfectly well. Berger directed her to use only three drops on being again attacked, to repeat the inhalation in a quarter of an hour if she thus obtained no good effect, and even to increase the dose to 6-8 drops.

Besides Berger, Vogel and Holst* extol the virtues of nitrite of amyl in migraine. Holst made some experiments on himself and on five patients who presented typical symptoms of spasm in the muscles of the vessels. Inhalation of 3-5 drops produced a sensation as if the blood were rushing to the head, the face became red, and if the inhalation were not suspended, momentary insensibility occurred. At the same instant, however, the pain in the head vanished. In the case of Holst himself, and in that of one patient, motion caused the pain to return in a few minutes with all its former violence; two other patients, who remained quiet, had a relapse in an hour; another, who kept perfectly still, was not only relieved of that paroxysm, but the next remained absent longer than usual, and was also removed by the nitrite of amyl.

Holst also observed in himself that in well-marked attacks of migraine drinking freely of anything warm gave instant relief when a general perspiration broke out. This he explains by relaxation of the vascular system, which was previously in a state of tonic contraction.

The beneficial influence of the inhalation of carbonic acid, much lauded by A. Mayer,† may be traced to the fact that this gas, by paralysing the vasomotor nerves, removes a temporary state of spasm.

The constant galvanic current is another remedial measure that may lay claim to great importance in the different forms of migraine. It appears to be better adapted for the treatment of this affection than any other means we know of, inasmuch as we can exercise a real and powerful influence, strictly localised, and exactly regulated as to quantity and quality, on the cervical sympathetic nerve and the upper part of the spinal

* Holst, "Ueber das Wesen der Hemikranie und ihre electro-therapeutische Behandlung nach der polarne Methode." *Dorpater med. Zeitschrift*, 1871. Bd. ii, p. 261-228.

† "Wiener med. Presse," 1865, No. 46, p. 1123.

cord. Benedikt,* Trommhold,† Fieber,‡ M. Rosenthal,§ Althaus,|| and others, have written on this subject; it was Holst,¶ however, who first introduced the really methodical and rational use of the constant current, on Brunner's polar system, in the different forms of migraine. His practice is to put one electrode on the cervical part of the sympathetic, at the inner edge of the sterno-mastoid and in contact with a considerable surface, and to establish communication with the other electrode, which is held in the palm of the hand. In hemicrania sympathico-tonica the anode is placed on the sympathetic, and a battery of 10-15 elements used; the circuit is suddenly closed, and the current, after being passed 2-3 minutes, is gradually reduced in strength. This is copied from Brunner's mode of proceeding in irritable conditions of the auditory nerve. In hemicrania neuro-paralytica the cathode is applied to the sympathetic, and the circuit is not simply closed, but is made to produce a more powerful effect by repeated interruptions or by reversing the current. The first-mentioned method, which directly diminishes irritability, was most often resorted to by Holst, especially in cases in which the condition of the muscular coat of the vessels was doubtful, as he regards an abnormal irritability of the vasomotor nervous system of certain parts of the head as the primary cause in every hemicrania, even in those which are characterised secondarily by a paralytic state, and he believes that by lessening this abnormal irritability the tendency to secondary relaxation of the walls of the vessels is probably overcome. Holst's own results, in about thirty cases, are, on the whole, in favour of this method of treatment. For details we must refer to the original work, only remarking that in all cases in which there is spasm of the vessels there is considerable improvement a few seconds after passing the current, the anode being placed on the sympathetic, and that this is often conjoined with a sensation of warmth in the head and heat and redness in the ears.

In one very obstinate case of hemicrania of the neuro-paralytic type (the face being flushed and hot during the

* Benedikt, "Elektrotherapie." Wien, 1868.

† Trommhold, "Die Migraine und ihre Heilung durch Electricität." Pest, 1868.

‡ Fieber, "Compendium der Elektrotherapie." Wien, 1869, p. 120.

§ M. Rosenthal, "Handbuch der Diagnostik und Therapie der Nervenkrankheiten," Erlangen, 1870.

|| Althaus, "Treatise on Medical Electricity," 3rd edition. London, 1873.

¶ Holst, l.c., p. 275.

paroxysm), which never entirely intermitted, but took the form rather of a series of exacerbations and remissions, occurring in the person of a girl of 17, treatment by the interrupted galvanic current, the cathode being applied to the sympathetic, gave marked relief; though this did not last long, perseverance in the use of the same means for weeks was thus far successful that the painless intervals gradually became longer than the attacks, and subsequent treatment by reversing the current was followed by still more decided improvement.

IV.—GLAUCOMA. NEUORETINITIS. OPHTHALMIA. NEUROPARALYTICA.

In this section we discuss the imperfectly known connection which exists between certain diseases of the eye on the one hand, and functional disorders in the domain of the cervical sympathetic on the other.

We will first consider:—

Glaucoma.—This disease consists, as is proved in v. Gräfe's celebrated works, of *an increase of the intraocular pressure*. Inflammatory changes (choroiditis and disorders of nutrition in the vitreous body) may, as a rule, be regarded as the causes of this increased pressure. Remak, however, expressed the opinion, unaccompanied by any very convincing arguments, that glaucoma may have its origin in primary disease of the spinal cord. Adamük and Wegner have observed, in their investigations on the dependence of intraocular pressure on the agency of the cervical sympathetic, that the latter has a great influence on the glaucomatous process. Adamük believes that the ultimate cause of glaucoma is not increased pressure, but obstruction to the return of venous blood, produced by loss of elasticity in the sclera, which, again, is the result of inflammation; and that the sympathetic is only thus far involved—that irritation of it is followed by contraction of the arteries and overloading of the veins in the fundus of the eye, and by increase of tension.

Wegner, who examined two cases of glaucoma simplex, accompanied by neuralgia of the trigeminus, has come to the conclusion that the sympathetic vascular nerves may, in three ways, take part in the production of glaucoma: they are either directly concerned in the inflammatory process, or irritated by pressure, or stimulated, reflexively, by the sensory trigeminus nerve; he referred to the latter cause the two cases mentioned.

Hippel and Grünhagen reject this explanation, being of opinion that both acute glaucoma and glaucoma simplex, without any inflammatory symptoms, proceed directly from the trigeminus, irritation of which occasions, according to them, an increase of the intraocular pressure. They state that the less the vascular tone (which is dependent on the sympathetic), the more readily does this increased pressure appear, as tonicity counteracts the tendency to such increase. (We think ourselves justified in omitting to mention here the numerous theories of glaucoma not directly connected with the sympathetic.)

Illustrative clinical instances of the disease are very rare. In various cases of mechanical irritation, or compression of the cervical sympathetic, we noticed no glaucomatous phenomena; in one case, formerly described (irritation from goître on the right side), there was a considerable degree of tension of the globe, which, however, never assumed any other than a physiological character; after being some months under observation no arterial pulse or excavation of the papilla appeared.

Horner,* Bærwinkel,† and Schmidt-Rimpler,‡ have, in some cases in which there was presumably paralysis of the sympathetic filaments, observed increased tension in the eye. According to Schmidt-Rimpler§ the existence of an influence exerted by the sympathetic on increase of intraocular pressure, and thus on the occurrence of the glaucomatous process, is not to be denied; nevertheless, this state is found more seldom, and to a slighter degree, than that resulting from disease in the trigeminus.

Neuroretinitis.—Benedikt|| teaches that the sympathetic system often plays an important part in causing those *intracranial, limited regional diseases* ("Heerderkrankungen") which lead to secondary affections of the optic nerve, or retina.

The forms of disease under consideration are those described as Neuritis, Atrophia descendens, and "engorged papilla." Benedikt declares that it is an unsatisfactory explanation of the phenomena to assert the existence of a "neurore-

* Horner, "Ueber eine Form von Ptosis." *Klin. Monatsbl. für Augenheilkunde.* 1869, vii., p. 193; Nicati, "La paralysie du nerf sympathique cervical," 1873.

† Bærwinkel, "Archiv. für klinische Medicin." 1874, Bd. xiv., p. 549.

‡ Schmidt-Rimpler, "Klin. Monatsbl. für Augenheilkunde," xii., p. 398.

§ "Handbuch der Ophthalmologie," Bd. v. (1875), p. 98 and 99 (Capitel "Glaucom").

|| Benedikt, "Elektrotherapie." Wien. 1868, p. 253 ff.

tinitis," and an engorgement of the retinal vessels (v. Gräfe)* arising from increase of intracranial pressure. He advances the theory that in the local diseases within the cranium one has often to do with antecedent or accompanying neuroses of the sympathetic vasomotor fibres; that the symptomatic neuroretinitis, in most cases, depends on a morbid condition of the sympathetic, which is, further, a symptom observed in various other cerebral disorders. In the same way also he endeavours to explain the occurrence of other symptomatic phenomena—such as functional derangements of the auditory nerve in diseases of the brain, secondary affections in parts of the brain which are situated at a distance from the original limited diseased area (such as the sympathy shown in the cortical substance of the brain in cases of tumour in the pons), and hydrocephalus in those cases in which the idea of the extension of the morbid action to the walls of the ventricles by continuity of tissue is out of the question. These views, so ingeniously worked out by Benedikt, may, doubtless, greatly help us in understanding the causation of many secondary disturbances of the circulation in local cerebral diseases; as regards specially his conception of "neuroretinitis," however, as a secondary, sympathetic neurose, it seems to us to be very deficient in positive, confirmatory evidence—at least his presumed sensibility of the sympathetic in the neck, and the therapeutic success following galvanization of the sympathetic in chronic diseases of the brain, are of little value in this respect.

H. Schmidt's† experiments have lately demonstrated a direct communication between the subarachnoid space and the lamina cribrosa, and supply a good explanation of the occurrence of the engorged papilla and simple white atrophy when the intracranial pressure is increased. The former difficulties in the way of giving a reason for engorgement of the retinal vessels‡ are thus removed; while, on the other hand, in most cases of engorged papilla and simple white atrophy, they render superfluous Benedikt's supposition that the neuroretinitis is a secondary sympathetic neurose.

* v. Gräfe, "Ueber Neuroretinitis," *Archiv für Ophthalmologie*, 1866. Bd. xii., p 114.

† H. Schmidt, "Zur Entstehung der Stauungspapille bei Hirnleiden," *Archiv für Ophthalmologie*, 1869. Bd. xv., p 193.

‡ Seseman (*Archiv. für Anat. und Phys* 1869, p 154) showed that compression of the cavernous sinus is not followed, as v. Gräfe believed, by great engorgement in the retinal veins, as the return of blood, by direct communication with the superficial veins of the face, is quite free enough.

With respect to the influence exercised by the cervical sympathetic on the occurrence of

Ophthalmia neuroparalytica (an influence the existence of which is not improbable, bearing in mind the fact that vasomotor fibres pass from the sympathetic to the trigeminus) we quote an observation made by Walther,* and mentioned by Henle.† Here, after division of the sympathetic in extirpating an aneurism of the carotid, ophthalmia appeared; the disturbance of the circulation, however, following such an operation, may, perhaps, alone suffice to account for the ophthalmia. According to Sinitzin's formerly-quoted (somewhat untrustworthy) experiments, division of the sympathetic should rather ward off ophthalmia, as it lessens the irritability of the globe of the eye; he states, nevertheless, that ligature of the carotid on the corresponding side equalises the difference in irritability, and does away with the consequences of extirpating the sympathetic.

V.—PROGRESSIVE FACIAL HEMIATROPHY.

In a former part of this paper we mentioned some cases in which mechanical injury of the cervical sympathetic was followed by emaciation of the corresponding side of the face. There is a well-known disease which is characterised by atrophy of one side of the face, usually first attacking the superficial soft parts, and then the deeper tissues—a disease which has been called *Prosopodysmorphia* by Bergson, *Neurotic facial atrophy* by Samuel and Bäerwinkel, "*Aplasie lamineuse progressive*" by Lande, and *progressive facial hemiatrophy* by others. Romberg and Bergson, and, at a later date, Samuel, regarded it as connected with the nerves of nutrition; while Stilling believed it to be the result of disturbed function in the vasomotor nerves, especially in those filaments included in the trigeminus, and destined for the vessels of the head. Stilling's view, that there is diminished reflexion from the sensory nerves of the vessels to the corresponding vasomotor nerves, is somewhat strained, and it might easily be shown that the vasomotor nerves of the face take a *direct* share in the morbid action, especially those which form part of the trigeminus, as in the cases recorded by Axmann, Hüter, and others.

Bäerwinkel endeavours to show that in the cases observed by him, in which there was atrophy in the region supplied by

* "Gräfe's und Walther's Journal," xxix. 1840, p. 549.

† "Nervenlehre," p. 570.

the infraorbital nerve, we must admit the existence of disease in the spheno-palatine ganglion. But Lande has lately denied that the disease has a neurotic origin, and maintains that we have to do with a genuine and primary atrophy of the fatty tissues, that the elastic tissue remains unaffected, its retraction causing the falling in of the other soft parts and contraction of the capillary vessels, the latter leading to further disturbances of nutrition. Nevertheless, many considerations render this hypothesis doubtful; it would not exclude, as Lande himself admits, the co-operation of nerves of nutrition (the existence of which he erroneously regards as demonstrated) in the production of the disease, since the primary shrinking of the fatty cellular tissue might possibly itself depend on a lesion of the vasomotor nerves of nutrition.

We will not here further discuss these relations, but only state that till very lately we were in possession of so few facts that would justify us in believing the disease to be in any way related to the sympathetic, that attention had been turned rather to the vasomotor nerves of nutrition included in the trigeminus. Since, however, these fibres, before joining the trigeminus, are for the most part contained in the cervical sympathetic, there is still some possibility of the latter being involved, and the possibility is indirectly rendered more probable by the circumstance that slight atrophy of one side of the face is observed in some cases of injury of the sympathetic in the neck. Brunner* has lately recorded one striking case of unilateral atrophy of the face, which he believes points to a diseased state, a condition of permanent irritation, of the cervical sympathetic. The case occurred in the person of a Jewish lady, 27 years of age, who, during pregnancy, had an attack of convulsions with loss of consciousness, and afterwards repeated epileptic seizures. For a long time these attacks followed regularly on each faradisation of the facial muscles, and were ultimately associated with difficulty of breathing and palpitation. In the course of four years an atrophy of the left side of the face was gradually developed, the hair of the head and the eyelashes became grey, and several yellow and white spots appeared on the skin, which afterwards assumed a yellowish brown, or brown colour. There was also a feeling of pressure and cold in the left eye, pain in the whole left side of the face, and in the jaw and throat; violent pain in the neck and chest, as

* Brunner, "Zur Casuistik der Pathologie des Sympathicus." *Petersburger med. Zeitschrift*, N. F. Bd. ii., 1871, p. 260.

far down as the region of the stomach, the latter sensations presumably only on the left side. The frontal and temporal muscles were found to have almost quite disappeared, and the zygomatici and the other muscles of the angle of the mouth, of the nose, and lips, more or less atrophied, and some of them at the same time contracted; their electro-muscular contractility was intact. The external part of the left ear was, on the whole, much thinner, smaller, and cooler than that of the right. The left eye appeared larger than the right, *the palpebral fissure wider, and the eyeball more prominent, the pupil more dilated and sluggish in its action.* The conjunctiva was rather pale, its vessels being sparingly filled with blood; the secretion of tears and mucus was diminished. The skin of the whole face was very thin and dry, and the subcutaneous fatty cellular tissue almost entirely absent. One side of the face was always paler, even when reddened by heat, cold, or mental changes; it took almost no part in perspiration, only the nasal fold being somewhat moist. The temperature in the right side of the mouth was $\frac{1}{5}^{\circ}$ C. higher than in the left, and in the right auditory meatus about 1° higher than in the left. There was pain on pressure on the left ganglion cervicale supremum, but none on the right; pressure on the ganglion cervicale medium on both sides produced slight pain. The heart sounds were clear, but irregularly accentuated, the same being the case in the carotid sounds; frequency of pulse variable, 86—100 in the minute.

Brunner thinks that the symptoms in this case correspond to the state experimentally produced in animals by galvanization of the divided cervical sympathetic, or its ganglion supremum. The dilatation of the pupil, its sluggish action, the widening of the palpebral fissure, the exophthalmos, the scanty secretion of tears and mucus, the feeling of tension in the eye (as in glaucoma), the lowering of temperature on the whole left side of the face, the absence of perspiration, &c., are to be explained in this way; and the formerly mentioned cases of Ogle and others show that very similar symptoms accompany pathological irritation of the sympathetic. Brunner concludes that a more lasting, or constant irritation of the sympathetic (perhaps of inflammatory character, or caused by a tumour) gave rise to a persistent state of spasm in the blood vessels, and to the train of symptoms already described in his case. The palpitation of the heart is also to be referred to deficient innerva-

tion by the sympathetic; and the same may be said of the epileptic seizures which follow spasm of the vessels of the medulla oblongata or the basilar parts of the brain, and, possibly also, according to Benedikt and Meynert, of the left hippocampus major. Brunner further believes he has proved that the trigeminus and facial nerves have no connection with it, and that the slight pains in the atrophied side of the face are perhaps to be explained by muscular sensation, or disturbance of nutrition. In accordance with his view of the case, Brunner cautiously employed the galvanic current, long continued, of weak tension, of few elements, and as *constant* as possible, confining its action to the two upper cervical ganglia. Galvanization practised in that manner was at once followed by quieting of the heart's action and slight dilatation of the pupil, while the affected side of the face became red and covered by a profuse perspiration. Brunner reckons on obtaining successful results from this method of treatment on the supposition that, as is probable from the persistence of the symptoms of irritation and the pain on pressure on the upper ganglion, we have to do with an irritation or chronic inflammation of the latter, not with a malignant degeneration.

In one case, observed by us, galvanization produced reddening of the affected side, which lasted some hours, yet, after having used the constant current some months, we could not boast of any permanent good result. In this case, however, we had no decided symptoms of an affection of the sympathetic.

VI.—PROGRESSIVE MUSCULAR ATROPHY.

Although Cruveilhier and Aran are usually regarded as the original discoverers of progressive muscular atrophy, and, to a certain extent, with justice, the celebrated work of Sir Charles Bell* contains not merely a record of several cases of it, but also the first attempt at a physiological explanation of its cause. Especially interesting is one observation (No. lxxxvi.), under the heading "Local paralysis of the muscles of the extremities."† "These affections of particular muscles, or classes of muscles, imply a very partial disorder of the nerves. A disease of the brain, or a disease in the course of the nerve, must influence the whole limb, or that portion of it to which

* Bell, "Physiologische und pathologische Untersuchungen des Nervensystems;" übersetzt von Romberg, Berlin, 1832.

† *L.c.*, p. 364.

the nerve or nerves are distributed. But in these cases particular subdivisions of the nerves, included in the same sheath, or running the same course, are affected. I am inclined to attribute such partial defects to the influence of visceral irritation. In that case *it must still be the influence of the sympathetic nerve which produces it*; and, yet, on the other hand, it seems impossible to account for such entire loss of motion without the intermediate influence of the brain." Insufficient as Bell's argument must appear to us now, the first reference to the sympathetic nerve as the seat of the primary lesion, is not without interest. This allusion appears, nevertheless, to have met with but little attention, as Abercrombie describes the disease as a local nervous affection, and Romberg as a spinal paralysis, while the later authors regard it as of myopathic origin (Aran), or as an atrophy of the anterior roots of the spinal nerves (Cruveilhier). Besides these, various other theories have been propounded, tracing it principally to changes in the spinal marrow, especially in the anterior columns (Lockhart Clarke, Charcot, &c.); these views are more or less generally accepted, and we will not now further discuss them.

To Schneevogt* belongs the merit of first drawing attention to the accompanying affection of the sympathetic, which, in earlier examinations, appears to have escaped observation. In the case investigated by him the brain and spinal cord were normal as far downwards as the fourth cervical nerve, and considerably softened, and extensively infiltrated with finely granular fat and granulation cells, from the fifth cervical to the second dorsal nerve; the posterior roots of the cervical nerves were unchanged, the anterior strikingly thinned, especially the five upper, which consisted only of some very slender filaments. The cervical part of the sympathetic was converted almost into a cord of adipose tissue, in which the nerve-fibres were replaced by flat cells containing crystals. The cervical ganglia had almost completely degenerated into fatty tissue, while the thoracic part of the sympathetic likewise contained some fatty matter. The spinal ganglia and vagus were normal. Amongst the peripheral nerves the left ulnar especially showed striking changes. Schneevogt accordingly feels bound to support the doctrine that the disease is of a central origin, and includes both an

* "Niederl. Lancet," Sept. und Okt., 1854, p. 218. See Schmidt's "Jahrbücher," 1855; 87^{ter} Band, p. 179

affection of the anterior roots and a disturbance of the sympathetic, or of the innervation of single ganglia.

Whilst in most of the later cases, with the sole exception of Schneevogt's, the examination of the sympathetic and ganglia seems to have been neglected, Jaccoud,* on the contrary, undertook this investigation in two cases, and attained positive results.

The two patients in question died in August and September, 1864, the one of asphyxia, from paralysis of the inspiratory apparatus, the other of gangrene of the lungs. In both there was atrophy of the anterior roots in all the cervical and the three or four upper dorsal nerves. On microscopical examination the white and grey substances of the spinal medulla were found unchanged. *On the other hand the sympathetic in both cases showed a fibro-fatty degeneration. The whole cervical part was transformed into fibrous connective tissue of decidedly old standing, in which were seen many spots of fatty infiltration: the nerve fibres were secondarily atrophied, and that to a greater degree than in the spinal roots. The ganglion cervicale supremum was only in the first stage of the process, there being considerable hyperplasia of the cortical and interstitial connective tissue, but no atrophy of the nerve elements, the fibres, as well as the ganglionic cells, appearing intact. In the rami communicantes was found atrophy of a nature corresponding to the condition of the anterior roots; the median nerve contained, amongst many healthy fibres, also some that were pathologically changed (simple atrophy, absence of the medullary sheath, and even of the axis cylinder). Jaccoud regards it as unquestionable, from the stages of the different processes, that the disease began in the cervical part of the sympathetic, and spread thence both centripetally (by the rami communicantes and the anterior roots) and centrifugally (as is indicated by the partial affection of the median nerve).*

Changes in the sympathetic are also mentioned by Swarzenski (atrophy of the trunk and of both upper ganglia), and by Duménil (fibro-fatty degeneration of the cervical and thoracic parts, considerable hyperplasia of the connective tissue, atrophy of the nerve-fibres, and regressive metamorphosis of the ganglionic cells).

In the greater number of recorded cases no accurate examination of the sympathetic system was made; its integrity,

* Jaccoud, "Bulletin de la soc. méd. des hôpitaux de Paris;" Union méd. 1865 (T. xxv.), No. 4, p. 60. See also "Leçons de clinique médicale," p. 361.

however, is specially affirmed by many good observers—Landry, Frommann, Menjaud, Hayem, Charcot and Joffroy, Duménil (in three cases), and Friedrich (in six cases).

Lubimoff,* on Charcot's suggestion, thoroughly examined the sympathetic—the cervical and thoracic parts, and abdominal ganglia—in two cases, one of protopathic progressive muscular atrophy, and one of a secondary nature, connected with lateral amyotrophic sclerosis. In the first case only the intervertebral ganglia exhibited appreciable changes, which, nevertheless, as the patient had at the same time suffered from tuberculosis, were probably due to this complication; the state of the sympathetic was a negative one. Also in the second case only some intestinal ganglia showed similar changes affecting the nerve and connective tissue cells, namely granular pigmentation of the latter.

Thus, to the five positive results are opposed at least sixteen completely, or almost completely, negative statements with respect to the sympathetic.

Let us now see if the clinical course of progressive muscular atrophy permits us to draw more positive conclusions regarding the eventual implication of the sympathetic than the few and contradictory items of information supplied by the autopsies hitherto made.

Remak† discovered that, in treating patients suffering from progressive muscular atrophy by galvanism, he could produce spasmodic movements in the atrophied muscles when the positive electrode was placed in an "irritable zone" reaching from the first to the fifth cervical vertebræ (especially in the fossa carotica, or in the triangle between the lower jaw and the external ear), and the negative electrode below the fifth cervical vertebra. Concerning these well-described, very remarkable phenomena, we will merely observe that the movement always took place on the side opposite to that on which the positive electrode was placed; when both were placed on the middle line the movements appeared on both sides; and when the current was very weak they occurred only in the most paralysed muscles. Remak regarded these spasmodic movements, which he afterwards named "Diplegic,"‡ as of reflex origin, produced

* "Archiv. de Phys. normale et pathologique," I. Sér., 1874, p. 889.

† Remak, "Oesterr. Zeitschrift für practische Heilkunde," 1862, p. 1 and 29. See also "Application du courant constant au traitement des névroses," Paris, 1865, p. 26.

‡ Remak, "Application du courant constant," p. 28.

through the ganglion cervicale supremum of the sympathetic, more especially as the entrance of the current was felt by the patient behind the eyeball. He holds that progressive muscular atrophy is a disease of the sympathetic ganglia, or also of the cervical part of the spinal cord. In that way may be explained the irregular progress of the muscular atrophy, inasmuch as in the centres the ganglionic cells, on which the nutrition of the muscles depends, have an arrangement different from that of the nerve-fibres in the peripheral trunks which are connected with them; further, this also explains the frequently simultaneous occurrence of "neuro-paralytic inflammation," which consists particularly in painful swelling of the joints (arthritis nodosa), and which yields to galvanic treatment of the sympathetic. Remak also includes the so-called reflex paralysis amongst the paralysees of the sympathetic; probably also certain forms of hysterical, saturnine, and diphtheritic paralysees.

We pass over Remak's other statements which refer more particularly to therapeutics, as we are now more especially treating of the pathogeny of the disease, and will again discuss, at the end of this sketch, its treatment by means of the so-called galvanization of the sympathetic.

Remak's observations regarding "diplegic movements" were confirmed by M. Meyer* and Drissen† in a case of progressive muscular atrophy. Fieber,‡ on the contrary, could not produce these movements in a similar case by following Remak's method. Benedikt§ also states that in the cases treated by him the diplegic movements were wanting, but, nevertheless, recommends galvanization of the sympathetic, in connection with other methods of galvanization—a plan of treatment the importance of which is fully proved by his valuable record|| of cases. Erb¶ also states that he has not been able to obtain the diplegic contractions in the manner described by Remak; it does not appear, however, that he experimented on actual cases of *progressive* muscular atrophy. Though in most of our cases of this disease the diplegic movements could not be excited, we were able, with little difficulty, to demonstrate them in *one* single case. With

* M. Meyer, "Die Elektrizität in ihrer Anwendung auf practische Medicin." 3te Auflage," 1868, p. 219.

† Drissen, quoted in above book, p. 219.

‡ Fieber, "Berl. klin. Wochenschrift," 1866, No. 25, p. 261 (ix. Versuch).

§ Benedikt, "Elektrotherapie," ii. Abth. (Wien, 1866), p. 389.

|| "Ibidem," p. 389-412.

¶ Erb, "Arch. für klin. Medicin," 1867, iii. Band, p. 356.

regard to the conditions which give rise to these movements, and their symptomatic explanation, we differ entirely from Remak. The relation, affirmed by Remak and adopted by Fieber and M. Meyer, of these motor phenomena to the sympathetic ganglia, appears to us, both on physiological and empirical grounds, to be in no way warranted. In none of the cases in which diplegic movements were observed by us (in progressive muscular atrophy, saturnine paralysis, and hysterical atrophy), did we find that they occurred specially or exclusively in the way stated by Remak, and we thus do not consider ourselves justified in adducing them as evidence of abnormality of function or condition in the sympathetic nerve.

More important in this relation is the occurrence of disturbances of the innervation of the eye, which can be traced to diseased action in the oculo-pupillary fibres distributed in the cervical sympathetic. In this category may be included some cases of progressive muscular atrophy recorded by Bærwinkel,* Voisin† (from Bouillaud's Clinique), and Menjeaud.‡

Voisin's case was that of a man aged 44, who had suffered from the disease seven or eight years, first in the left, and then in the right arm. For three or four weeks he felt slight spasmodic movements in the upper eyelid, frequently having the sensation as if a grain of sand were in the eye; during this time also his sight became weaker. The left pupil was only half as large as the right, both responded normally to the stimulus of light, and dilated on pinching various parts of the body. The left cornea was flattened so that its highest point lay 1mmtr. nearer the iris than on the right side. After some months the same changes appeared also in the right eye; both pupils were then equally small and sluggish in action, the cornea in both eyes equally flattened, and vision on both sides weak.

In Menjeaud's case,* in which the atrophy was confined chiefly to the region supplied by the median and ulnar nerves on both sides, there was considerable contraction of the left pupil. Post-mortem examination revealed the existence of atrophy of the anterior roots of the lowest cervical and

* Bærwinkel, "Prager Vierteljahrschrift für pract Heilkunde," 1858, lix., p. 133.

† Voisin, "Gaz. hebdomadaire," 1863, No. 37; "Gaz. des hôp.," 1863, No. 110, p. 437.

‡ Menjeaud, "Gaz. des hôp.," 1866, No. 3, p. 10.

* L. c.

uppermost dorsal nerves, especially on the left side. The sympathetic and its ganglia were normal.

In explanation of the phenomena occurring in the eye in his case, Voisin refers to Claude Bernard's experiments, in which division of the anterior roots of the two lowest cervical and the two uppermost dorsal nerves was followed by contraction of the pupil and flattening of the cornea. As in the case observed by him the muscles affected were principally those supplied by the median and ulnar nerves, and as these take their origin in part from the spinal nerves just named, he infers that the disturbance of nutrition proceeded centripetally from the peripheral nerve fibres to the anterior roots, and gave rise to secondary atrophy of the latter. The non-participation of the sympathetic in causing the oculo-pupillary phenomena in the above case is to be inferred, according to Voisin, from the circumstance that vaso-motor disturbance, especially increase of temperature in the affected parts, had not been noticed; he thus adopts Bernard's view, that the nerves controlling the vessels of the extremities have their origin entirely in the ganglia of the sympathetic and join the nerve trunks only outside the vertebral column.

From the occurrence of oculo-pupillary phenomena in progressive muscular atrophy, without simultaneous increase of temperature of the paralysed upper extremity, one cannot draw a just conclusion either regarding the participation of the anterior roots or the non-participation of the sympathetic, even if Voisin's record were on all points less inexact than it really is.

The occurrence of oculo-pupillary symptoms in the affection in question, however, is rare, if not quite exceptional. We find it mentioned only in a few instances by Bergmann, M. Rosenthal, and Friedreich. Duchenne states expressly, in discussing Voisin's case, that he had not once met with these phenomena. We also, in all our cases, which were a long time under observation, failed to discover disturbance of innervation in the eye.

It is only in Schneevogt's case, among all those in which degenerative changes in the cervical sympathetic were found, that contraction of the pupil is mentioned as a symptom. Here, as we have seen, there was not only fatty degeneration of the sympathetic, but atrophy of the anterior roots, involving specially the five upper cervical; there was also softening of the spinal cord from the fifth cervical to the second dorsal nerves—exactly in the region of the centrum

cilio-spinalis inferius. The contraction might thus arise either from the diseased sympathetic or from the central medullary affection. Jaccoud's record of the cases in which he had a post-mortem examination, unfortunately contains nothing about the symptoms and course of the disease as they came under his notice only a few days before death.

We thus, in the meantime, get little aid, either from anatomical research or physiological analysis of symptoms, in our inquiry regarding the nature of progressive muscular atrophy. We can give, therefore, no definite opinion as to the part (though it is probably a not unimportant one) played in it by the sympathetic system. *Is the sympathetic usually affected at all? And if it is, is it through centripetal conduction of the primary muscular disease to the peripheral nerves, the spinal roots, and the rami communicantes? Or, contrariwise, is the sympathetic affection the primary one, spreading centrifugally to the peripheral nerve trunks and muscles, and centripetally to the spinal centres?* So run the questions which will have to be answered in the future. It is to be hoped that, should opportunity offer for making post-mortem examination, the investigation of the sympathetic may not be neglected, and that it may lead to more definite results; very specially should its condition be compared with that of the other central and peripheral nervous apparatuses, with particular reference to the nature and date of the disease; and, as is also indicated above, greater attention must be paid to the occurrence of oculo-pupillary and vasomotor phenomena.

With reference to therapeutics, we will, in conclusion, mention that in one case of severe progressive muscular atrophy reported by Nesemann,* galvanization produced a temporary improvement; but later a relapse took place, which did not yield to the same treatment. As by Remak, so by Benedikt, M. Meyer, Guthzeit, Erb (according to Friedrich) and others, favourable results have been obtained from galvanization of the sympathetic. M. Rosenthal and we ourselves have never seen much good follow from this treatment.

Muscular Hypertrophy.—This disease is known under various names, such as "*Muscular hypertrophy*," "*Lipomatosis musculorum luxurians progressiva*" (Heller); "*Atrophia musculorum lipomatosa*" (Seidel); "*Paralysie musculaire pseudo-hypertrophique*," or "*Paralysie myosclérosique*" (Duchenne).

* Nesemann, "Berl. klin. Wochenschrift," 1868, No. 37.

Like progressive muscular atrophy, which is often combined with it, it has sometimes been regarded as a primary myopathic affection, and at other times as a neuropathic disease. The first-mentioned opinion was held by Spielman,* whilst Duchenne,† and after him Stoffella,‡ without very obvious reasons, argued that it was of cerebral origin. Griesinger§ assumed that it was a disease of the vasomotor nerves, and Benedikt|| mentions it among the "*trophoneuroses*," and believes one of his cases to have been of the nature of a *paralysis of the sympathetic*. In this case the hypertrophy affected principally the muscles of the right shoulder (the deltoid, pectoralis major, teres major and minor, serratus anticus major); moreover, *the right side of the face was redder, and perspired more freely than the left, the pupil was dilated, and the sympathetic tender to pressure*. Besides Menjon's¶ case, which was brought under this category by Seidel, we have only three detailed accounts of post-mortem examinations in this disease. The first is one recorded by Eulenburg,** in which Cohnheim made the examination. The result, with respect to the nervous system was perfectly negative; microscopic examination revealed no pathological changes in the brain, spinal medulla, peripheral nerves, or sympathetic system. Barth,†† on the other hand, found changes in the spinal cord and peripheral nerves which he believes are only secondary. Unfortunately no examination of the sympathetic was made. In a case investigated by Charcot, the state of the spinal cord and peripheral nerves was entirely a negative one. Therapeutically it may only be mentioned that Benedikt thinks he obtained considerable improvement in three cases by galvanization of the sympathetic. In one of the cases already quoted, not only the symptoms in the head, but also the hypertrophy disappeared, so that the patient could resume work. Chvostek‡‡ states, however, that the prolonged use of electricity is followed, at most, merely by arrest of the

* Spielmann, "Gaz. méd. de Strasbourg," 1862. Mai, No. 5, p. 85 ff.

† Duchenne, "Electrisation localisée." 2 edit., 1861, p. 334.

‡ Stoffella, "Zeitschrift der Gesellschaft der Aertzte," in Wein, 1865, Heft. 1, p. 85 ff.

§ Griesinger, "Archiv. der Heilkunde," 1864 (6ter Jahrgang), p. 171.

|| Benedikt, "Elektrotherapie," Wien, 1869, p. 186 ff.

¶ Menjon, "Med. Chir. Transactions," Vol. liii., 1852, p. 73 ff. See also Seidel, "Die Atrophia musculorum lipomatosa." Jena, 1867, p. 64.

** Eulenburg, "Berl. klin. Wochenschrift," 1865. No. 50; *ibidem* 1866. No. 37.

†† Barth, "Archiv. der Heilkunde," 1871, Bd. xii., p. 121.

‡‡ Chvostek, "Oesterr. Zeitschrift für practische Heilkunde," 1871. No 38-40.

morbid process. We ourselves got no successful result from the galvanic method of treatment in one case; it was, however, very severe and of old standing. But in two cases (in two young girls), which were some time under our observation, faradaic electrization of the atrophied and of the pseudo-atrophied muscles was followed by improvement, which was not apparent on galvanizing the sympathetic. O. Berger,* who also considers the disease a trophoneurose, faradised the hypertrophied muscles and galvanised the cervical sympathetic for weeks in two cases without making any impression on the disease. Erb records the same experience.

VII.—EXOPHTHALMIC GOÎTRE.—(BASEDOW'S DISEASE.) (GRAVES' DISEASE.)

This name is given to a group of symptoms, discovered by Parry in 1825, but first accurately described by Basedow† in 1840, including palpitation of the heart, swelling of the thyroid gland, and protrusion of the eyeball (exophthalmos). These three cardinal symptoms are usually found together, but any one of them may be wanting. The order in which they are usually developed is—first, palpitation of the heart (with or without atrophy), then goître, and finally exophthalmos; it seldom occurs that all the symptoms appear suddenly and simultaneously, or that the tumefaction of the thyroid body is noticed before the heart affection. Other disturbances, especially in the nervous system and the female generative organs, are occasionally observed, but they are merely of secondary importance.

Concerning the nature and origin of this disease, many different theories have been promulgated. It was at first most naturally regarded as a special form of chlorosis or anæmia; but this idea must be given up, as it is often met with in men and in children, and in women beyond the climacteric period, and frequently in those whose catamenia are quite regular. The palpitation of the heart has been thought to be the cause of the other symptoms—a theory that is negatived by the simple fact that the accelerated and more powerful action of the heart in cases of lesion of the cardiac valves never leads to goître and exophthalmos. The seat of the disease has further been placed in the nervous system, especially in the spinal cord. When Claude Bernard made known

* Berger, "Deutsches Archiv. für klin. Medicin," 1872. Band ix., p. 363.

† Casper's "Wochenschrift," 1840. No. 13 and 14.

the phenomena produced by division of the cervical sympathetic in animals, it was noticed that there were certain resemblances between them and the symptoms of exophthalmic goître, and the inference was drawn that the disease was caused by functional disturbance in the cervical sympathetic (Koeben,* Aran,† Trousseau,‡ &c.) Since that time this theory has found wider acceptance for the reason that, in a small number of cases of Graves' disease anatomical changes have actually been found in the cervical sympathetic. Before we relate these cases individually, we will try to show in what manner the principal symptoms of this disease may be compared with the phenomena occurring after division of the cervical sympathetic in animals. Division of the cervical sympathetic produces dilatation of the vessels, and, in consequence of there being more blood in the parts, a considerable elevation of temperature on the corresponding side of the head. Analogies for both of these experimental facts are found in Basedow's disease. The dilatation of the vessels indicates its presence in the strongly pulsating, frequently tortuous and prominent little arteries in the region supplied by the carotid, but especially in the swollen thyroid gland. The sudden occurrence of the goître in the course of a few days, the softness of the swelling, the perceptible pulsation of the thyroid arteries, the loud blowing sounds heard over the same, the rapid increase and decrease of the tumour, according to the force of the contractions of the heart, and the engorged veins frequently seen on the surface of the gland—all these facts point to the conclusion that we have to do chiefly with a dilatation of the vessels distributed in the thyroid body, a conclusion fully borne out by anatomical investigation. §

Although we find, in the enlargement of the thyroid vessels, a resemblance to the dilatation of the vessels after division of the cervical sympathetic, yet this similarity is not evidence of a complete analogy; for then proof would be required that division of the sympathetic also leads to swelling of the thyroid gland. That animals, as well as men, may be the subjects of swelling of this gland is well known. In districts in which goître occurs endemically amongst the people, Bail-

* "De exophthalmo a struma cum cordis affectione." Inaugural Dissert., Berlin, 1855.

† "Gaz. hebdom.," 1860. No. 49.

‡ "Gaz. Med.," 1862, p. 474.

§ Naumann, "Deutsche Klinik," 1853. No. 24. F. Banks, "Dublin Hosp. Gaz.," 1855, No. 9. Fournier et Ollivier, "Union Méd.," 1868, p. 95.

larger* has observed it amongst the animals, especially in mules, seldomer in horses and dogs. Boddaert† has also produced a swelling of the thyroid body in rabbits and guinea-pigs by ligaturing the internal and external jugular and inferior thyroid veins. Regarding the second of the constant phenomena appearing after division of the sympathetic in the neck—the elevation of temperature—something similar has been found in exophthalmic goître, since special attention has been directed to the subject; thus, Paul‡ has found an increase of $\frac{1}{2}$ -1° C., Teissier§ of 1-2° C.; and Cheadle|| states, in a record of eight cases, that he has always observed a rise in the temperature. We ourselves, in nearly all our cases, have noticed an increase (at least temporarily) of $\frac{1}{2}$ -1° C.; and in one case, that of a girl 20 years of age, who was under treatment about nine months, the temperature in the axilla always amounted to 38·2-38·8° C. Nevertheless there are cases in which the temperature is normal, as recorded by Charcot¶ and Dumont,** It is evident that this elevation of temperature is of comparative value as a proof of pathological analogy to that occurring after division of the cervical sympathetic only when observed in an uncomplicated case of Basedow's disease, and not caused by any concomitant febrile affection. Those suffering from this disease feel the rise in temperature subjectively as heat, even when objectively it is very slight; this is often accompanied by increased secretion of perspiration.

With reference to the cause of this increased temperature, nothing is opposed to the idea that it is to be sought in the increased blood-supply resulting from dilatation of the vessels; it is not, however, locally confined, like that produced experimentally by dividing the sympathetic, but is equal in both axillæ and in both auditory meatuses. The sympathetic is clearly involved on both sides, as is shown by the facts that the vessels on both sides are equally filled, and that the exophthalmos is bilateral.

The second principal symptom in exophthalmic goître

* "Du goître exophthalmique chez les animaux domestiques." Comptes rendus, 1862. Tome lv., p. 475. See also Virchow, "Die krankhaften Geschwülste," 1867, Bd. iii., p. 57.

† "Extrait du Bulletin de la Soc. de Méd. de Gand," 1872.

‡ "Berliner klinische Wochenschrift," 1865. No. 27.

§ See Trousseau, "Clinique méd.," T. ii., p. 540.

|| "Lancet," 1869. No. 25.

¶ "Gaz. méd.," 1856, p. 600.

** "De Morbo Basedowii." Inaug. Dissert., Berlin, 1863, p. 27.

which we have to compare with the results of division of the sympathetic is exophthalmos. It is seldom unilateral, but usually appears in both eyes at once, though not always with equal intensity.*

After division of the cervical sympathetic no exophthalmos occurs, but rather a sinking of the eyeball within the orbit. But if the central end of the divided nerve be subjected to electrical stimulation the eyeball is protruded, and we have genuine exophthalmos. It has already been explained in the physiological part of this work, that this proptosis is due to the action of Müller's unstriped ocular muscles and of some other unstriped muscles discovered in the upper and lower lids and in the orbital aponeurosis, all these being supplied by the sympathetic nerve, and thrown into contraction on irritating it. The occurrence of exophthalmos in this disease might be explained, if we were to assume the existence of a condition of irritation in the oculo-pupillary fibres of the cervical sympathetic. Thus, as we had to assume a state of paralysis of the vasomotor fibres of the cervical sympathetic (analogous to division in animals) to explain the dilatation of the vessels in the thyroid gland, and the rise in temperature, we have to do with two opposite conditions—paralysis of the vasomotor and irritation of the oculo-pupillary fibres of the cervical sympathetic. This assumption contains nothing arbitrary. We know, as we formerly explained, that the vasomotor and oculo-pupillary nerves have entirely different centres, and that we can experimentally educe independently of each other the appearances depending on disturbance of one or other class of fibres. If we now suppose that Graves' disease rises from an affection of the nerve centres, we may well conceive that the centre for the oculo-pupillary fibres of the cervical sympathetic (*centrum cilio-spinale*) is in a condition of irritation while, on the contrary, the centre for the vasomotor fibres is in a state of paralysis. Even though we regarded the cause of exophthalmic goitre as not central, but peripheral, and situated in the cervical sympathetic, there is nothing forced in the above supposition, that the oculo-pupillary fibres are in a

* Such cases have been observed by Mackenzie, quoted by Fischer, "*Archives générales de Méd.*," 1859, p. 652; by Förster, quoted by Lebert, "*die Krankheiten der Schilddrüse und ihre Behandlung*," Breslau, 1862, p. 309; by Schnitzler, "*Wiener, Medicinal-Halle*," 1864, No. 27; by Chisholm, "*Med. Times and Gaz.*," 1871, No. 1: by Emmert, "*Archiv. für Ophthalmologie*," 1871, Bd. xvii., p. 218.

condition of irritation, and the vasomotor fibres in a state of paralysis. We find many analogies in the pathology of the peripheral nervous system. Thus, in neuritis a state of irritation in the motor part of a nerve (spasm) may co-exist with one of paralysis in the sensory portion (anæsthesia); or, on the other hand, we may have paralysis of the motor and hyperæsthesia of the sensory filaments. Even in the same fibres we may often find opposite conditions; in sensory fibres for example, both diminished and increased sensibility (anæsthesia dolorosa), and in motor fibres diminished and increased motor power (paresis, or paralysis associated with slight spasmodic movements).

We have endeavoured to show the relation existing between Basedow's exophthalmos and the cervical sympathetic, inasmuch as we pointed out that in animals exophthalmos follows irritation of that part of the sympathetic system. The question now rises whether we are justified in regarding this exophthalmos as due *entirely* to a state of irritation in the sympathetic, and thus genetically the same as the exophthalmos produced experimentally. Such an assumption we cannot make. Permanent exophthalmos, such as that of Basedow's disease, is only possible when the unstriped ocular muscles, which have their innervation from the sympathetic, are in a state of persistent tetanic contraction, that is, when there is a permanent state of irritation in the nerve fibres supplying these muscles. There is, however, no physiological analogy to warrant the adoption of such an opinion. Every state of irritation in a nerve passes gradually into the opposite condition, that of paralysis. We cannot, therefore, unconditionally claim the exophthalmos occurring in animals on irritating the cervical sympathetic by an electric current as an explanation of Basedow's exophthalmos. It is also not easy to conceive that the effect of spasm of these muscles, so slightly developed in man, should be to produce such an extreme degree of proptosis as is often met with in exophthalmic goitre; for even with the strongest electrical stimulation of the cervical sympathetic, a degree of irritation which can never occur under physiological conditions, there is never produced such marked exophthalmos as we find in this affection. Thus we may fall back on the view of the earlier authors, that the *congestion* (venous hyperæmia) and *development of fat* in the cellular tissue of the orbit tend to aid in causing protrusion of the eyeball. That there is con-

gestion in the orbit during life is indicated by the broad and tortuous retinal veins,* and by the facts that when the palpitation of the heart abates the exophthalmos becomes less marked, that on increase of the heart's action the eyeball becomes again more prominent, and further, that the eyeball sinks into the orbit on slight pressure with the finger and after death. There are also various reasons for supposing that the eyeball is pressed forward by a cause of a mechanical nature. In persons who have died from strangulation there is exophthalmos in consequence of venous engorgement, and the same is produced in animals by ligature of the jugular vein. Further, new-born children whose birth has been accomplished only after prolonged labour, or by aid of instruments, present a slight degree of exophthalmos, the result of the pressure on the head, which prevents the free return of blood. The same is observed in women in severe labour—a fact which was well known to the ancients. Exophthalmos may arise from various other mechanical causes which lead to serous infiltration of the retrobulbar connective tissue (as in dropsy), and from congestions in the head. Many conditions (not including tumours of the brain), such as violent and prolonged bodily exertion, and convulsions, may also give rise to exophthalmos by increasing the pressure in the veins. Demarquay† has collected several such cases from general medical literature. As regards the abnormal development of fat as a factor tending to produce exophthalmos, it has often been demonstrated‡ in at least double the normal quantity, and sometimes even more. Thus, it is extremely probable that all three conditions—spasm of the unstriated orbital muscles, venous hyperæmia, and increase of the fatty tissue in the orbit—co-operate in the production of exophthalmos.

We have still to consider a peculiar phenomenon to which v. Gräfe§ was the first to direct attention, and which unquestionably indicates the participation of the sympathetic in the production of the disease. In health when the plane of vision is altered, when the eye is turned upwards or down-

* v. Gräfe, "*Archiv. für Ophthalmologie*," 1857, p. 292.

† "*Traité des Tumeurs de l'orbite*." Paris, 1860, p. 157-223.

‡ Basedow, "*Casper's Wochenschrift*," 1848, p. 775; Heusinger, "*Casper's Wochenschrift*," 1851, p. 52; Brück, "*Deutsche Klinik*," 1862, p. 207; Naumann, "*Deutsche Klinik*," 1853, p. 269; Laqueur, "*De Morbo Basedowii*," Inaug. Diss., Berlin, 1860, p. 12; v. Recklinghausen, "*Deutsche Klinik*," 1863, p. 288; Peter, "*Gaz. hebdom.*" 1864, p. 181; Fournier et Ollivier, "*Union méd.*," 1868, p. 95.

§ "*Deutsche Klinik*," 1864, p. 158; and "*Berliner klinische Wochenschrift*," 1867, No 31.

wards, the upper eyelid follows closely the movements of the eyeball; in exophthalmic goitre this consentaneous movement of the eyelid is wanting. According to v. Gräfe it is not caused by the prominence of the eye, as the movements of the lid remain intact in exophthalmos from other causes (from tumours of the orbit, for instance); on the other hand, this mobility is lost even in the slightest degrees of the exophthalmos of Basedow's disease. This symptom, too, may disappear in the course of the disease, both spontaneously and on using narcotic injections without any improvement in the proptosis. Gräfe regards it as of great importance in the recognition of the slighter forms of the affection, those cases in which the prominence of the eye does not exceed physiological bounds and in which the goitre is wanting. The cause of this deficient mobility of the eyelid is, according to him, to be sought for in disturbed innervation (spasmodic contraction) of Müller's unstriped orbital muscles.

Another symptom in exophthalmic goitre which tends to connect it with the sympathetic is the occurrence of various inflammatory and ulcerative affections of the eye, which fortunately appear but seldom, principally among men,* but also occasionally amongst women.†

v. Gräfe considers the above-mentioned insufficiency of the eyelid as the chief cause of these inflammatory affections: on account of the deficient mobility of the upper eyelid when looking down, as in reading, a part of the cornea remains uncovered, the conjunctival sac becomes dry and the veins dilated, and thus inflammation and even chemosis are produced. But this affection of the lids cannot be regarded as the sole cause of the dry state of the eyeball and the consequent inflammatory symptoms, since the same circumstances in paralytic lagophthalmos (as in facial paralysis) generally leave the eye unaffected. v. Gräfe thus holds that Basedow's ophthalmia is principally of a neuromyopathic character, caused by disordered function of the sympathetic fibres of the trigeminus. This notion receives confirmation

* Basedow, "Casper's Wochenschrift," 1840, p. 222; Praël, "Archiv. für Ophthalmologie," 1857, Bd. iii, p. 201; Naumann, *loco citato*, p. 286; v. Gräfe, "Archiv. für Ophthalmologie," 1857, p. 285; and "Berliner klin. Wochenschrift," 1867, No. 31.

† Lavrence, "Gaz. des hôp." 1858, p. 198; Tatum, "Med. Times and Gaz.," 1864, 23 January, p. 89; Teissier, "Canstatt's Jahresbericht," 1864, Bd. iv., p. 173; Patchett, "Lancet," 1872, June 15.

by the observation that in severe cases of Basedow's disease the sensibility of the cornea is lowered.

In comparing the symptoms of Basedow's exophthalmos with the phenomena following division of the cervical sympathetic, we have still to advert to the pupil. Dilatation of the pupil accompanies every case of exophthalmos experimentally produced; in that of exophthalmic goitre, on the contrary, it is entirely absent. v. Gräfe has recorded its absence in about two hundred cases. When, opposed to this large number, some observers* state that they *have* seen dilatation of the pupil in a few cases, this symptom can scarcely be considered as having any pathological connection with Basedow's disease; most likely these patients were myopic. From the absence of dilatation or other abnormality of the pupil, we conclude that the pupillary fibres of the sympathetic are not involved in this affection.

The third principal symptom in exophthalmic goitre is the increased action of the heart, which may certainly be regarded as depending on functional disturbances in the cervical sympathetic. That nerve contains fibres whose function is to accelerate the heart's action, and electrical irritation of these increases the number of the heart's contractions. For further details on this subject we refer to the physiological part of this essay. The increased action of the heart in Graves' disease may be explained by assuming the existence of irritation of the cervical sympathetic; but, as we have already pointed out, while discussing exophthalmos, the assumption of such a *persistent* state of irritation in order to explain the permanency of the heart affection is physiologically inadmissible, as this condition must soon pass into that of paralysis. The increased action of the heart, however, may be interpreted as due to a variety of *paralysis* in the cervical sympathetic; paralysis of the cardiac sympathetic nerve fibres leads to dilatation of the cardiac vessels (the coronary arteries), and therefore to a greater flow of blood to the muscular tissue of the heart, and thus to stimulation of the cardiac ganglia.

* Romberg and Henoch, "Klinische Wahrnehmungen und Beobachtungen," Berlin, 1851, p. 182; Reith, "Med. Times and Gaz.," 1865, p. 521; Friedrich, "Lehrbuch der Herzkrankheiten," Erlangen, 1867, p. 312; Trousseau, "Clinique méd.," Paris, 1868, Tome ii., p. 536; Fournier et Ollivier, "Union méd.," 1869, p. 93; Gildemeester, "Archiv. für die holländischen Beiträge zur Natur und Heilkunde," Utrecht, 1864, Bd. III., p. 416 and 420; Cheadle, "Lancet," 1869, No. 25; Emmert, "Archiv. für Ophthalmologie," 1871, Bd. xvii, p. 203.

Having gone over the principal symptoms of Basedow's disease, and shown their relation to the phenomena observed in certain experiments performed on the cervical sympathetic, we come now to the description of the pathological anatomical changes which have been found in the sympathetic after this disease. The number of facts is certainly small; but it must be remembered that the opportunities for making post mortem examination have been comparatively few, and that it is only lately that attention has been directed to the sympathetic system as connected with the affection. The cases which have come to our knowledge are the following:—

1.—A case from Trousseau's Clinique, described by Peter.* It was that of a woman who, seven years before coming under observation in the Clinique, had received a violent shock by the sudden death of her father, this being followed, in one night, by exophthalmos, goître, and palpitation of the heart. Five months later she died comatose, after an apoplectic seizure. At the examination the upper and middle cervical ganglia were found normal, but the lower, especially on the right side, considerably enlarged and injected. Microscopic examination showed a marked development of connective tissue in the lower cervical ganglion, whilst the nerve tissue (ganglionic cells, and nerve filaments) had become considerably atrophied.

2.—A case described by Archibald Reith.† A man, 24 years of age, who had suffered some time from Graves' disease, died two days after being taken into hospital. The autopsy, performed by Dr. Beveridge, 22 hours after death, showed principally, as regards the cervical sympathetic a hypertrophy of the middle and lower ganglia; they were hard and firm, and were seen, under the microscope, to be infiltrated by greyish matter. The trunk of the sympathetic and the branches of the inferior thyroid and vertebral arteries were increased in size and tuberculous.

3.—In a case examined by Cruise and M'Donnel, and recorded by Moore,‡ the lower cervical ganglion was almost obliterated, and replaced by cellular and fatty tissue.

* "Notes, pour servir à l'histoire du goître exophthalmique," *Gaz. hebdom.*, 1864, No. 12, p. 180.

† Reith, "Exophthalmos—Enlargement of Thyroid Gland—Affection of Cervical Sympathetic," *"Med. Times and Gaz."*, 11 Novr., 1865, p. 521.

‡ William Moore, "Some remarks on the Nature and Treatment of Pulsating Thyroid Gland, with Exophthalmos," *"Dubl. Quar. Jour. of Med. Science,"* 1865, p. 344-352.

4.—In the case of a girl treated by Traube* during life, and examined by v. Recklinghausen, there was *remarkable thinning of the sympathetic and its ganglia*.

5.—Biermer† found, in the case of a man, considerable atrophy of the sympathetic on both sides of the neck, especially the right.

6.—Virchow‡ mentions having observed an increase of size, and interstitial thickening, of the cervical sympathetic, especially in the upper and lower ganglia.

7.—In the case of a scholar, 48 years of age, who had died in Würzburg of Basedow's disease, Geigel§ states that both cervical sympathetics were surrounded by a thick sheath of fatty and connective tissue; the microscope, however, showed no change either in the nerves themselves or in the ganglia, except intense brown pigmentation of the latter; there was also no increase of the interstitial connective tissue.

8.—Knight|| found, in examining the body of a man of 33 years of age, who had died of Graves' disease, that *the left lower cervical ganglion of the sympathetic was larger than the right, the connective tissue increased in quantity, while the nerve-cells appeared much smaller and less pigmented. In the middle and lower left cervical ganglia the nerve-cells were smaller than on the right side, while the nerve filaments in the left sympathetic were only half the size of those in the right*.

9.—Ganghofner¶ relates the case of a servant, 43 years of age, who was under his treatment for exophthalmic goître, and whose body, after death, was examined by Klebs. The *left sympathetic* in the neck appeared *extremely atrophied in its lower part*, measuring scarcely $\frac{1}{2}$ mm. in thickness; in the upper part it was thicker, about $7\frac{1}{2}$ mm.; above the middle ganglion it was normal in point of size, but *unusually red*. The atrophied spot was about 2 centimeters long. Below this was found the lower ganglion, about the size of a pea, from which emerged two very thin nerves, one passing forwards, the other backwards. Under the jaw and on the sympathetic lay a lymphatic gland, swollen and much reddened. The upper ganglion was normal.—On the *right* side the upper cervical ganglion was normal, the middle ganglion somewhat broader; below this the *sympathetic became very thin*, and

* Traube and v. Recklinghausen, "Deutsche Klinik," 1863, No. 29, p. 286.

† This case was communicated to us by letter.

‡ Virchow, "Die krankhaften Geschwülste," Bd. iii., p. 81.

§ Geigel, "Würzburger med. Zeitschrift," 1866, Bd. vii., p. 84.

|| Knight, "Boston Med. and Surg. Journal," 1868, 19 April.

¶ Ganghofner, "Prager Vierteljahrschrift," 1876, Bd. cxxx.

passed into a small ganglion, from which issued some exceedingly slender filaments which followed the course of the vessels. *Microscopic examination of the atrophied part of the sympathetic revealed the presence of atrophy of the nerve elements.* This case, so valuable because so carefully examined, is, as regards the condition of the sympathetic, analogous to those of Traube and Biermer, and partly also to Knight's, inasmuch as here also the prominent change is atrophy of the sympathetic.

Opposed to these positive statements are four cases in which no change was found in the sympathetic.

1.—In Paul's* case there was nothing abnormal in the thoracic and cervical parts of the sympathetic, nor in both lower cervical ganglia. Microscopic examination of longitudinal and transverse sections of the right lower ganglion, both fresh and after carmination, showed that the nerve filaments and ganglionic cells were of normal dimensions, with clearly marked nuclei and nucleoli, partly colourless, and partly pigmented.

2.—In a case recorded by Fournier and Ollivier,† and most carefully dissected by Ranvier, no alteration was found in the sympathetic, either on examination with the microscope or by the naked eye. The case is specially remarkable, as death occurred by gangrene of the extremities; no cause for the gangrene was found.

3.—Rabejac‡ has described a case of exophthalmic goitre in a woman 37 years of age, which also ended fatally through gangrene of the extremities. Bouvier examined the sympathetic microscopically, and could discover nothing abnormal.

4.—We have to quote only one other case, that of Wilks;§ in it the ganglia of the sympathetic showed no change, except that they were strikingly white in colour; microscopically there was nothing abnormal, except some increase in the quantity of the connective tissue fibres.

These negative results prove nothing against the assumption that Basedow's disease may be connected with functional disturbances in the sympathetic, because these may exist without being necessarily accompanied by any anatomically demonstrable change.

With respect to treatment, we mention only the effects of

* Paul, "Berliner klin. Wochenschrift," 1856, No. 27.

† Fournier et Ollivier, "Union méd.," 1868, No. 8 and 9.

‡ Rabejac, "Du goître exophthalmique," Thèse, Paris, 1869.

§ Wilks, "Guy's Hosp. Reports," 1870, Bd. xv., p. 17 ff.

galvanization of the sympathetic. In 1867 we performed our first experiments on this subject, and found that, on using a very weak ascending current of only 6-8 elements, the frequency of the pulse fell from 120 to 90 per minute.

More lately Chvostek,* M. Meyer,† and others, got good results by galvanizing the sympathetic, especially as regards the exophthalmos and the goître, whilst the influence on the heart was but slight and transitory. The improvement in the goître and the exophthalmos, which was permanent, was also accompanied by improved general health, showing itself in abatement of the chlorotic symptoms, and reappearance of normal menstruation.

On Thought without Words, and the Relation of Words to Thought. By WILLIAM W. IRELAND.

(Continued from page 224.)

Naturally, if a child be dull or stupid, he will be slower to learn the use of the senses or the muscles, and, accordingly, we find that some idiots of the lowest type are not able to learn to walk or grasp. I remember one case distinctly where the only acquired motions were receiving food into the mouth, and following with the eyes the spoon with which he was fed.

Imbecile children are slower in learning to walk or execute other movements than those of normal intelligence, even after they have learned to walk, their gait is slow, uncertain, and awkward, they are clumsy in the use of the hands, and it is difficult to teach them any exercise or handicraft requiring method and dexterity. An easy but superficial way of explaining this deficiency, is to say that it is owing to want of nervous power, deficient sensation, to weakness, or to want of motor capacity. This may hold good in some cases, but in many it is simply owing to the want of the guiding power of the intellect. It would be difficult to say how far idiots are deficient in the proper estimation of size and distance, as their answers to questions are little to be depended on; but I have seen instances in those of a low type, where they grasp at objects obviously beyond their reach. Even imbeciles who can speak, and have a decent degree of intelligence, are generally very inexpert at such exercises as catching a ball, or aiming at anything, and it is difficult to teach them greater

* Chvostek, "Wiener med. Presse," 1869, No. 19; 1871, No. 41; 1872, No. 23.

† M. Meyer, "Berliner klin. Wochenschrift," 1872, No. 39.

dexterity. Their awkwardness at any unaccustomed movement is sometimes very striking.

No one is likely to deny that in insanity the power of recognising and interpreting phenomena are much injured; but very little enquiry has been made into the question: Whether, since the intellectual processes by which we arrive at the perception of size and distance, and the use of our muscles, are very slowly learned, or imperfectly performed in idiocy, are they ever deranged in insanity? Amidst their wild reasonings and false inferences have lunatics false ideas of distance or size, and in the obliteration of the mental faculties, which takes place in dementia, do they lose their estimate of distance, or their notion of the proper size of objects? How far is the play of inference and causation that accompanies our sensual life disturbed in mental derangement? or can the extraordinary perversity in the notions of the insane be occasionally put down to the loss of mental guidance?

As already said, there is no doubt that in insanity the capacity of interpreting our sensations is much deranged. Some lunatics lose, as it were, the power of interrogating the impression of the senses, selecting those impressions to which they are wont to pay attention, and correctly judging of their real import. The power of the will is lost, while the conscious mind is the witness of the passage of a procession of wandering ideas, no longer under the control of the judgment, and which it can neither guide nor check. In fact, insanity has often a strong resemblance to the ordinary state of dreaming, in which outward feelings excite ideas, uncontrolled by the parallel acts of consciousness, which accompany us in the waking state, and which keep us informed of our real situation. Many of the delusions of the insane are perverted sensations, and, not unfrequently, their origin is explained by lesions found after death. Lunatics assign pain or uneasiness really felt to rats or snakes, or other imaginary animals within them, to little men, who creep under the bed-clothes, and tear or pinch them, or to the malign influence of magnetisers, poisoners, or other tormentors. The patient may talk composedly, and will often argue gravely and plausibly in support of the most monstrous delusions. In insanity the power of imagination or the anticipation of sensations is very strong. He will mistake one of his family for an enemy come to injure him, or a fiend to torment him, and murders are sometimes committed under such false impressions. In

the following instance we have a delusion reduced to its simplest elements :—“An insane person refused to drink, assigning as a reason that there certainly was a person in the bottle containing the water offered to him. The physician, during the patient's meal, observed that the light fell on the bottle in such a manner, that he could see his own likeness in it; but on changing its position, the patient (not seeing his likeness) no longer refused to drink.”*

We are well accustomed to deduce from our sensations the objective nature of external objects, but in general we are completely unused to observe our sensations themselves, especially in cases where we cannot assign them to external objects, and this proclivity to refer our sensations to external objects often hinders us from having an exact consciousness of these sensations. In some abnormal mental conditions where the patient is much given to the introspection of objective states, the result of external impressions are sometimes mistaken for subjective changes : for example, I knew of a patient who was subject to alarming fainting fits, which were preceded by a sudden feeling of cold. He was very apprehensive and watchful of these fits coming on, and for years after an unexpected current of air gave him a fearful start as he instantly interpreted the sudden cold sensation as a return of the faintness.

The history of hysteria is full of these instances where subjective phenomena are interpreted as objective ones. I have not been able to collect many instances where there were illusions with regard to size and distance, but it appears that they may occur where there is no mental derangement whatever.

A member of the medical profession informed me that some years before, being in weak health, objects appeared to him to be smaller than usual, just as if they were looked at through the big end of a telescope. This produced the notion that near objects were at a distance, but on his putting out his hands to touch them the illusion immediately disappeared. He found that he could bring on and dispel the illusion at will; but getting into better health it finally disappeared. This is interesting as coming from a trustworthy observer. He seemed disposed to attribute the appearances to a change in the shape and position of the crystalline lens; but

* See Lectures on Insanity, by Sir Alexander Morison, M.D. London, 1848, p. 129.

though it is no longer disputed that a power of accommodation to distant objects resides in the crystalline lens which can change its degree of convexity, in ordinary physiological states at least there is no such amount of adjustment as to explain the effect. Moreover, in a mere change such as would be produced by diminished convexity in the lenses of the eye, the contact of the hand would not readily destroy the illusion, for the hand as well as the object would appear smaller and therefore more distant.

Dr. Grierson, of the Roxburgh Asylum, told me of a lady who, in her last illness, saw her husband and children smaller than usual, and regretted that they always appeared to be so far off.

The condition following the use of Cannabis, or Indian Hemp, closely resembles the delirium of insanity. The alteration of our notions of time and space has been remarked by most writers on the subject.* "Time appears of an immeasurable length. Between two ideas clearly conceived, there are an infinity of others, ill-determined and incomplete, of which we have a vague consciousness, but which fill you with wonder at their number and at their extent. It seems, then, that these ideas are innumerable, and as time is only measured by the remembrance of ideas, it appears prodigiously long. For example, let us imagine, as is the case with hachisch, that in the space of a minute we have fifty different thoughts, since, in general, it requires several minutes to have fifty different thoughts, it will appear to us that several minutes are passed, and it is only by going to the inflexible clock, which marks for us the regular passage of time, that we perceive our error. With hachisch the notion of time is completely overthrown, the moments are years, and the minutes centuries; but I feel the insufficiency of language to express this illusion, and, I believe, that one can only understand it by feeling it for himself." The author illustrates this by the rapidity of thoughts which is noticed in dreams.

Quite as astonishing is the illusion of sight, which makes short distances appear immense. I do not know if this appearance has been observed in other conditions than in poisoning by hachisch, nor can I give a rational explanation. The description is difficult. In this illusion a bridge or an avenue appears to have no end, and to be prolonged to un-

* The following description of the effects of this drug has been translated from an article in the "*Revue des Deux Mondes*," Mars, 1877. *Les Poisons de l' Intelligence*, par M. Charles Richet.

heard of improbable distances. When one ascends a staircase the steps seem to rise to heaven; a river, whose opposite bank we see, appears as large as an arm of the sea. Vainly one notices the error of which he is the victim. The judgment cannot rectify this appearance, and we say, "Here is a bridge which has a hundred mètres, but it appears to be as long as if it were 100,000 mètres." The author says that these two delusions are very persistent, and often last more than twenty-four hours after the injection of the poison.

I have not been successful in collecting many cases of such illusions in insanity. The subject has been little studied, and several eminent physicians, experienced in the treatment of the insane, have frankly confessed that they have paid very little attention to the question started by me. Possibly an intelligent observer, with good opportunities, might succeed in reaching some interesting results. The following notes will, at any rate, show that the subject has not been entirely overlooked.

Dr. W. A. F. Browne* tells us that Saussure, the celebrated Swiss geologist and physicist, was possessed with the idea that he had grown to an enormous size, and although he knew this notion to be unreal, he ordered doors and partitions in his house to be removed, or enlarged, to facilitate free passage for himself. Saussure had three attacks of paralysis, of which he died, after four years of suffering.

Dr. Browne had a patient who imagined that he did not exceed the size of a barley-corn, and that he was in imminent danger of being carried away by the sparrows, and who would not enter the airing court for fear of being trodden under foot.

Dr. D. Hack Tuke in his new work, "Insanity in Ancient and Modern Life,"† tells us of an insane gentleman whom he knew who believed that he was the man of sin spoken of in the Bible. Speaking of outward nature he said, "Everything has changed its aspect. Objects around me are no longer seen in perspective, but appear flat and raised above one another like a Chinese drawing. Spring will return no more."

Dr. Frederick Skae once told me of a patient seized with sudden insanity, which was cut short by timely treatment, where the man said that objects appeared to him to be larger

* See his pamphlet on "Anæsthesia, Hyperæsthesia, Pseudo-æsthesia. Chiefly as met with among the Insane," 1873.

† Chap. viii., p. 155.

than usual. A young man, who describes his own mental derangement, called *Grübelsucht**, or the metaphysical mania, remarks: "What is singular, often all things round about me appear small, so that, in relation to them, I seem larger, or the reverse. It is also astonishing that my taste for a particular pitch of the notes is often changed; for example, sometimes the middle octaves in the piano appear to me the most agreeable, and the higher notes affect my irritable condition in an unpleasant manner. At a later time the high notes please me, and I like best to hear tunes played on the middle octaves." I do not clearly understand how a man can see things larger or smaller without any change in the lenses of the eye, or in their adjustment, and it is difficult to conceive by what perversion of intellect one could estimate things smaller and larger than they really are. If we saw everything half as large, would the horizon not be doubled? and would it not be contracted when we saw things bigger? or do certain objects appear larger or smaller, while the ground upon which they stand or move, retains its usual apparent dimensions? The magnifying influence following intoxication through *Cannabis*, upon the distance of visible objects, is only a part of a general exaggeration of impressions, mental as well as sensual. Some writers call it *Hyperæsthesia* of vision. Dr. Moreau† would give to the increased sense of distance the same explanation which Richet restricts to that of the duration of time. Distance is measured by the number of intervening points between us and the extreme point seen: the attention runs from one point to another, and the number of these points being increased, the distance thus seems greater. There are instances on record‡ where the power of vision is much increased, but, on the other hand, it might be contended that in accordance with the principles already laid down, increased clearness in seeing distant objects would have the effect of making them appear to the mind to be

* Die *Grübelsucht*, ein psychopathisches Symptom von Dr. Oscar Berger, *Archiv. für Psychiatrie*, vi. Band, 1 Heft.

† Du *Hachisch* et de l'*Aliénation Mentale*. *Études psychologiques*, par. J. Moreau. Paris, 1845, § iv., p. 69.

‡ See one in Dr. Forbes Winslow's "Obscure Diseases of the Brain and Mind." London, 1863, p. 471. Dr. Brachet tells of a man who found that his vision had acquired astonishing capacity since the previous day. He could distinguish the most minute objects at an enormous distance. Five hours afterwards he felt a slight headache, and in a few hours more was seized with apoplexy, and died the next night. A recent coagulum of blood was found in the right optic thalamus. The inflammation which had preceded this effusion had affected a part of the brain immediately concerned in vision.

nearer rather than farther off. The causes of this affection are, probably, rather to be sought for in the hemispheres of the brain, than in the optic tract; they are mental, rather than sensory.

Seeing double, which sometimes comes on in the advanced stage of drunkenness and after the use of opium, is probably owing to the loss of mutual accommodation of the muscles of the eyeballs, and this explanation sometimes holds good where the same appearance occurs with lunatics; but it is evident that it cannot always do so, since there are cases where a single object is seen multiplied three or fourfold. Brierre de Boismont, in his well-known work on Hallucinations,* reproduces from a German writer a curious instance, which I translate without being clearly able to understand his explanations:—"Madame N., a washerwoman, tormented by violent rheumatic pains, left her trade and took to sewing. Having little practice in this kind of work, she sat up far into the night to gain enough to live upon. This did not save her from being very poor, and she was seized with severe ophthalmia, which soon became chronic. As she continued to work, she saw at the same time four hands, four needles, and four seams. There was double diplopia in consequence of a slight divergence of the visual axes. At first Madame N. took a reasonable view of this appearance, but some days after, her destitution having increased, and making a lively impression upon her mind, she imagined that God, pitying her misfortune, performed a miracle in her favour, and that she really sewed four seams at once."

Since our notions of size and distance, and our power of directing the muscular system being the very basis of all our knowledge, are the first of our acquirements, it is likely that they would be the last that we should lose; hence it is only in the closing stages of dementia or general paralysis that one might expect to find them seriously impaired or totally wanting. Naturally such cases are not favourable for study or analysis, they either do not respond at all to our questions or experiments, or give random, variable, and perplexing answers; hence great caution must be used in our search for examples. Not unfrequently general paralytics seem to lose their sense of weight and size: they try to lift things which their strength is insufficient to move, or they

* Paris, 1852, p. 130.

try to leap over obstacles which are quite insuperable. We also know that, as a general rule, demented lose all the manual dexterity and muscular adjustment which they had acquired; they gaze around in a bewildered manner; they fumble uselessly with their hands; they stagger in their gait; when they try to pick up their food with a fork, they sometimes miss the bit aimed at several times. Finally they give up feeding themselves, and cease to attend to the ordinary decencies of life. Is this owing to paresis, or a loss of sensory power, or ataxic conditions of the muscles; or is it at least, now and then, owing to the loss of the ruling intellect, to inability from sheer want of mind to guide the machinery of the body, and suit it to the changes in the world of sense? No doubt there are cases where the mal-nutrition or disease is confined to the brain, and where no fault can be found with the conducting cord or peripheral nerves.

On the other hand, instances are by no means uncommon where the reasoning faculties are much deranged, as evinced by extravagance in speech, but where the power of doing complicated work and estimating weight and distance are well preserved.

A patient once at Musselburgh, and now in the Roxburgh District Asylum, has often struck me as exemplifying this in a remarkable degree. The man pours forth a torrent of words, sometimes stating the wildest delusions, sometimes giving vent to the most uncouth combination of words in astonishing variety where one can perceive no connection, or a strange association between the words or the words and the ideas, often, in an excited or frenzied manner, and in the midst of all this mad talk he will go on working in a calm methodical way; for example, he will plant out leeks, tracing the lines regularly, and putting in each plant at an equal distance from the other. I do not remember ever to have heard this man make a coherent remark, but I saw an ingenious snare for birds which he had made, and he once showed me two blackbirds which he had caught.

In this case we may suppose that the convolutions in which the movements leading to speech are inaugurated, are the seat of an irritation which arouses these movements, without waiting for the behests of the reason and the will; a flood of words is let loose, many of which have no associated thoughts, whereas those portions of the nervous substance of the hemispheres which have to do with the direction of adapted motions, are at least comparatively healthy, and

their communications with the voluntary muscles (save those of voice) unimpaired. The man can therefore act reasonably, though he cannot talk reasonably.

In some of these cases of verbigeration the sounds uttered by the patients are ordinary words, though having little or no connected meaning; in other instances they are a mere chatter of diversified sounds, bearing a delusive resemblance to some foreign language. The "unknown tongues," spoken by the Irvingites or other visionaries, are probably the mixed result of religious faith and pretension, acting upon a brain disordered by pious frenzies.

I do not think many cases have been observed where insanity has been accompanied by the absolute misdirection of the muscles, so that the lunatic executes motions different from what he purposes, as in the patient described by Dr. Meschede,* of Königsberg, who, when he tried to execute any motion, either by his own desire, or at the direction of somebody else, always did the very contrary. If he wished to cast his glance to the left the eyes were turned to the right, and *vice versâ*. When he wished to look up, his eyes were cast down. In all the voluntary motions of the body the man assured his physician that the execution was exactly the opposite of what he had conceived and intended. It is difficult to explain this singularity in which the mind seems to have lost the proper direction of the machinery of the human body.

In some instances on record the patients used words in a wrong sense, or substituted one word for another in copying writing. Occasionally they go on blundering in this way without being aware of it, as in the case of the lady mentioned by Trousseau.† She was the mother-in-law of a French physician. "A visitor comes in, she rises to receive him with a gracious manner, and motioning him to take a seat, says 'pig, animal, sorry brute.' 'Madame desires you to be seated,' added her son-in-law, interpreting the meaning of the patient so strangely expressed." Trousseau observes that "the actions of this lady seemed to be sensible enough, and what was wonderful and not usual with aphasiacs, she did not appear to be put about, or to understand the offensive nature of the words which she used."

* "Correspondenz-Blatt der Deutschen Gesellschaft für Psychiatrie und gerichtliche Psychologie," November, 1874.

† "Clinique Médicale," Tome deuxième. Paris, 1868, p. 644.

The Relation of Words to Thought.

Man is not only distinguished from other animals, as *υέρον* or voice-dividing, but his superior intelligence is shown by the discriminating way in which he uses and reasons from the impression of his senses as well as by the astonishing complexity of the muscular motions which he learns to execute. In fact the human frame would be much too refined and complicated an instrument for a creature of inferior intelligence. The hand alone, without the capacity of using tools, would be, in many respects, an inferior possession to the claw of a wild animal.

But even the most skilful exercises of the human frame are the repetition of processes done by others, or the result of imitations of existing models. It is not man alone that does great things, it is men acting together, and this is done through speech. What we see in language is the tendency or habit of associating our ideas with certain sounds or other symbols in obedience to a powerful impulse, and for this purpose the voice is used as naturally as the arm for striking or the feet for walking. Had man not been furnished with a voice, or been unable to hear, we should no doubt have had some such contrivance as a figurative language like that of the deaf and dumb. There is no difficulty in seeing that the sounds agreed upon to symbolise certain meanings have no natural relation to these meanings. Sounds quite different are used by people of foreign speech, and the construction of languages, though always bearing a necessary relation to human thought is very various.

“Such in truth,” says Renan,* “is the richness of the resources of the human mind that there is absolutely nothing in common between Chinese and Sanscrit, the two languages which differ most save one thing, the end to be attained, that is the expression of thought. Chinese attains this end as well as the grammatical languages, but by entirely different means.”

But although a word has no necessary relation to a thought when we have once learnt to associate them together, the connection appears inseparable. When we hear the word the thought comes, when the word arises in the mind the thought follows, so that it is scarcely to be wondered at that a philologist like Max Müller, who has spent his life in examining words, should believe that they could never be dissociated from

* “*Origine du Langage.*” Paris, 1858, p. 217.

ideas, and that a man cannot reason without words. When one takes up this view it must be very difficult to make him part with it. To find thoughts in the mind without words requires a subtle mental examination; and how can we show this to another mind save by presenting the thought in words? How much people could think without words on subjects in which we are wont to use words, is impossible to say, because the experiment has never been tried, at least under conditions in which we could learn the result. If a man existed alone and solitary interpreting his sensations without seeking to communicate his thoughts or his feelings, battling with the powers of nature, and contending with inferior animals, he might then use reason without language; he would no doubt gain experience, and show sagacity in providing for his wants or avoiding hurt and danger. But this is a pure speculation. Such a man is unknown, and the moment he would be found by another man language would begin. Speech is, if not an indispensable method of arriving at any high mental endowment, at least too direct and obvious a one ever to be dispensed with, and it is only in the lowest grades of human intelligence, or in those rare cases where sight and hearing are destroyed from infancy, that we find it wanting.

As a general rule idiots of low intelligence cannot speak. They may possess ideas sufficient to allow them to use a few words, but as we see in normal children, intelligence must be somewhat more matured than this before the gift of speech appears. With this limitation it may be said that these idiots remain mute because they have no ideas which demand expression, and that they speak in proportion to their intelligence. Where the intelligence is feeble, the desire to speak is small, and where the intelligence declines, as in dementia, speech is sometimes given up long before the diminution of the intelligence seems to warrant its cessation. There is a large proportion of imbeciles who can understand what is said to them without being able to say anything. Out of the imbecile children admitted into the Larbert Institution, about 20 per cent. understand speech more or less, but do not speak. Occasionally idiots who cannot speak can hum tunes correctly. Though they do not know the relation of words to their thoughts, they have seized upon the harmonious relation of sounds to one another. This confirms the view that the word centre in the brain is different from the sound centre. Occasionally it happens that imbecile children

who can understand speech, but who have never uttered a word, have a good deal more intelligence than those who can speak. In these aphasic idiots words must exist as remembered sounds.

Sometimes under unusual stimulus or emotion, these mutes utter a few words; but the power of speech dies away with the momentary impulse that called it into play. Sometimes the approach of death causes a few words to be uttered. Of this there is a new example in the 19th Report of the Eastern Counties Asylum for Idiots and Imbeciles. Mr. Millard writes—"A boy was here for several years who had not been known to speak until a few hours before his death, when he uttered several intelligent sentences; another was suddenly roused to speech by an unexpected circumstance, and afterwards he continued to speak."

Dr. Adriani* tells us of a case which was recently verified. An idiot of eighteen years of age had remained depressed, and, as it were, stupefied from infancy, and who uttered no other word than "mamma." Having taken typhoid fever, his look became more lively; the expression of his physiognomy changed, and his mind expressed an unaccustomed vivacity. He spoke in an animated manner of what he suffered, and after recovering from the fever, from being sad he became gay, and he was able to express his ideas in varied words, to learn and sing songs, and to keep in remembrance the names of things and of persons.

Dr. Adriani cites a number of instances where insanity disappeared after typhoid fever. He considers that by the excitation of a new morbid process, the blood supply and nutrition of the brain are probably modified.

Dr. Wigan† gives a case of the sudden excitation of speech almost as wonderful as the well-known story of the son of Croesus:—"An export merchant in the present day, whose immense establishment is one of the most conspicuous and remarkable in the city of London (and who consulted me professionally, many years), had a son, about eight years of age, perfectly dumb, and the family had abandoned the hope that he would ever be endowed with the gift of speech. There was no defect in intellect, nor lesion of any other faculty. In a water party on the Thames, the father fell overboard, when the dumb boy called out aloud, 'Oh, save him! save him!'

* "Relazione Statistica Clinica del Frenocomio," di S. Margherita di Perugia per gli Anni, 1874-1875-1876, del Medico Direttore Roberto Adriani.

† "The Duality of the Mind," London: 1844, p. 377.

and from that moment spoke with almost as much ease as his brothers. Two of my intimate friends were present at the miracle which was the subject of unbounded joy and congratulation. The young gentleman is now one of the most active and intelligent members of his father's firm."

Wiedemeister* cites the instance of a bride who, on rising from the wedding breakfast to go away with her husband, became speechless, and remained so till she was moved by the sight of a burning church to call out "fire," and from that time she again had the use of words. So few of these stories are recorded, that one feels tempted to believe the desire of exciting wonder must have coloured the narrative, but such cases have their analogies in sudden recoveries from paralysis of the limbs. Probably the injured nervous centres or conducting tracts have for some time recovered their lost capacity, but through disuse and wasting do not resume their functional activity till stimulated by some sudden mental excitement or electric shock, when they respond with a start, and afterwards continue to act.

(To be continued.)

A Case of Microcephalic Imbecility, with Remarks. By G. E. SHUTTLEWORTH, B.A., M.D., &c., Medical Superintendent, Royal Albert Asylum, Lancaster.

The following account of a case of microcephalic imbecility, for three years under observation in the Royal Albert Asylum, Lancaster, may be of interest, both on account of the family history and of certain abnormalities in the structure of the brain and heart observed at the autopsy.

Mary X— was admitted into the institution in April, 1874, being then twelve years of age. She was at that time noted to be a girl of slender build, but fairly well developed in external physique, with the exception of a remarkably small head. With a stature of $61\frac{1}{4}$ inches and a weight of 87lbs., the head measured in its greatest circumference rather less than 17 inches. Its outline was somewhat oxycephalic, though this was disguised by a profusion of dark-brown hair. The features were regular, the nose aquiline, the eyes large and lustrous, and the dentition good,

* "Die Störungen der Sprache: Versuch einer Pathologie der Sprache," von Dr. Adolf Kussmaul. Leipzig: 1877, p. 201.

the upper incisors being large and prominent. Altogether the countenance was pleasing, and the expression denoted a certain amount of intelligence. The complexion was pallid and the extremities chilly; the pulse was deficient in force, but there were no other physical signs of cardiac abnormality. The functions of digestion, respiration, and excretion appeared to be normal; and there seemed to be no defect of the special senses, except that hearing was rather dull. The palate was "saddle-shaped," the voice high-pitched, the articulation slow but fairly distinct. The girl displayed good powers of observation and imitation, and was able to express simple ideas by means of short sentences. The bodily movements generally were slow; she could dress and undress herself with some assistance, and she was fond of helping to nurse younger children. For ordinary child's play she had but little taste, and she was not particularly fond of music. Her memory for persons was said to be good; her educational attainments were almost nil. She could, however, count her fingers correctly.

The following is the family history:—Her parents, belonging to the lower middle class, were persons in the prime of life, of fine physique and apparently vigorous constitution, temperate in their habits, and thoroughly intelligent. There was no abnormality of cranial conformation in either parent. There was no account of hereditary neurosis or mental defect on either side; but the father and mother were first cousins, and the offspring of the marriage was as follows. The first-born child was a girl, the subject of the present notice; the second a boy, perfectly healthy and intelligent; the third and fourth twin boys—one healthy and intelligent, the other microcephalic and imbecile. No special cause could be assigned for the occurrence of the microcephaly, except, as the mother suggested, it might have been determined in the first case by the anxiety resulting from what she had heard as to the bad effect of marriages between cousins. No unusual incident seems to have occurred during either of the pregnancies which issued in the birth of microcephalic children.

Mary X— progressed slowly but perceptibly under institution training, improved in distinctness of articulation, and in extent of vocabulary, learned to read a few words and to form letters in a copy-book, and developed some capacity for simple domestic work. She attained considerable aptitude in calisthenic exercises. She grew fast, but did not become

more robust, and her temperament remained sluggish. Her disposition was gentle, and she was affectionate towards those who had the care of her. She never menstruated. In May, 1877, she began to suffer from obscure pains in her limbs, and afterwards developed symptoms of phthisis, from which she died in August of the same year.

The autopsy, at which I had the valuable assistance of my friend, Dr. Ireland, of Larbert, disclosed the following appearances.—

The body was much emaciated; 67 inches in height; 24 inches in chest-girth at level of mammæ.

The head-measurements were as follow :—

- (a) Circumference $16\frac{3}{4}$ inches=425 millimetres.
- (b) Antero-posterior—
 (from nasal notch to occipital protuberance)
 - 1. Over vertex (tape-measure) $10\frac{1}{2}$ inches=261 „
 - 2. Basically (calliper measure) $5\frac{3}{4}$ inches=146 „
- (c) Transverse—
 (from tragus to tragus)
 - 1. Over vertex (tape-measure) 11 inches=280 „
 - 2. Basically (calliper measure) $3\frac{7}{8}$ inches= 97 „

The circumferential contour showed some asymmetry of skull, the right side being slightly larger than the left. This asymmetry was specially noticeable at the base, the right orbital plate and the right half of the sphenoid bone being broader by quarter of an inch than the corresponding structures on the left side. The crista galli was set obliquely pointing to the left side; and the anterior and middle fossa of skull seemed slightly more capacious on the right than on the left side. The cranium varied in thickness, measuring no more than one-eighth of an inch in some portions where sawn through for the removal of the calvarium. The sutures were all closed except the coronal, and the ossification of that was well nigh complete. The arch of the palate was highly vaulted.

Encephalon.—There was some fulness of the superficial vessels of brain and slight sub-arachnoid effusion. The cerebrum, cerebellum, and pons together, weighed immediately on their removal from the skull $21\frac{1}{2}$ ounces, including some little fluid. The general appearance of the encephalic mass and the arrangement of the convolutions are well shown in the accompanying wood-cuts (Figs. 1 and 2) taken from careful drawings, for which I am indebted to Dr. A. H. Young,

Demonstrator of Anatomy in Owen's College, Manchester. An asymmetrical character is observable about the anterior lobes of brain corresponding to that of the skull, the right side slightly exceeding in size the left. But the most striking peculiarity is the deficiency in size of the cerebral hemispheres (see fig. 1). These are, both absolutely and relatively, abnormally small, so that when the encephalon is viewed from above, the cerebellum is seen to be uncovered over the greater portion of its upper surface. The deficiency in size of the cerebrum is mainly due to an imperfect growth of the hemispheres backwards and downwards, *i.e.*, in the occipital and temporo-sphenoidal regions respectively. As a consequence, not only is the cerebellum left exposed superiorly, but the Island of Reil also remains uncovered, whilst the two limbs of the Sylvian fissure are separated at their origin by nearly half-an-inch (see fig. 2).

Of the lobes of the brain, the frontal and parietal are comparatively well developed, and their convolutions, though coarse, are well-defined and normal in arrangement. The temporo-sphenoidal lobes are small and deficient anteriorly, and the convolutions and fissures are not so well marked as those of the frontal and parietal lobes; the normal arrangement of the gyri in three antero-posterior tiers is, however, distinctly traceable. The occipital lobes are quite rudimentary, and it is impossible to detect evidence of the normal fissures and convolutions. The Island of Reil presents a flat and simple surface, the radiating gyri (*gyri operiti*) being entirely wanting.

On the inner surface of each cerebral hemisphere the corpus callosum is seen to be normal in extent. The callosomarginal fissure, however, terminates about an inch behind the genu of the corpus callosum, and is then broken up by secondary gyri. The calcarine fissure joins the internal parieto-occipital at a very acute angle, and the enclosed cuneate lobe is correspondingly small.

The cerebellum is relatively large (as compared with the Cerebrum), and is in all respects well developed. Its superior vermiform process is unusually distinct.

The Pons Varolii presents no obvious peculiarity of structure.

After being kept in spirits for twelve months, the entire encephalic mass is found to weigh only $12\frac{3}{4}$ ounces; and of this the cerebral hemispheres weigh $9\frac{3}{4}$ ounces; and the cerebellum, pons, &c., 3 ounces. The cerebellum alone may be estimated at $2\frac{3}{4}$ ounces; so that its ratio to the cerebrum

may be stated as 1 : 3·5, the normal ratio (according to Gray) being 1 : 8.

On section the grey matter of the convolutions appeared to be of normal proportionate thickness. My friend, Dr. Fletcher Beach, has kindly furnished me with the following note of microscopic appearances observed by him in a section from the frontal region :—

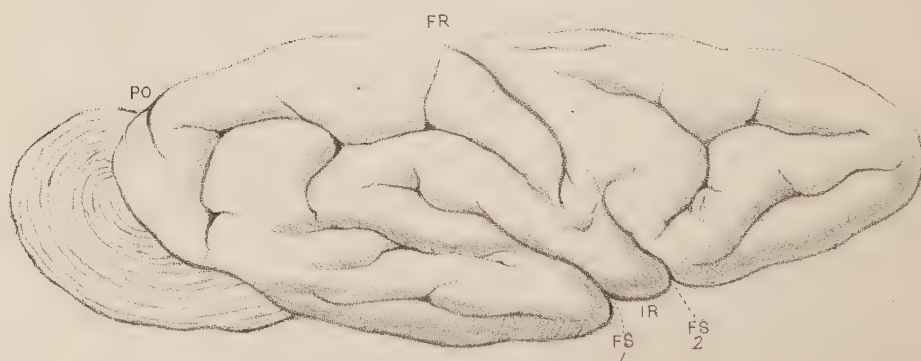
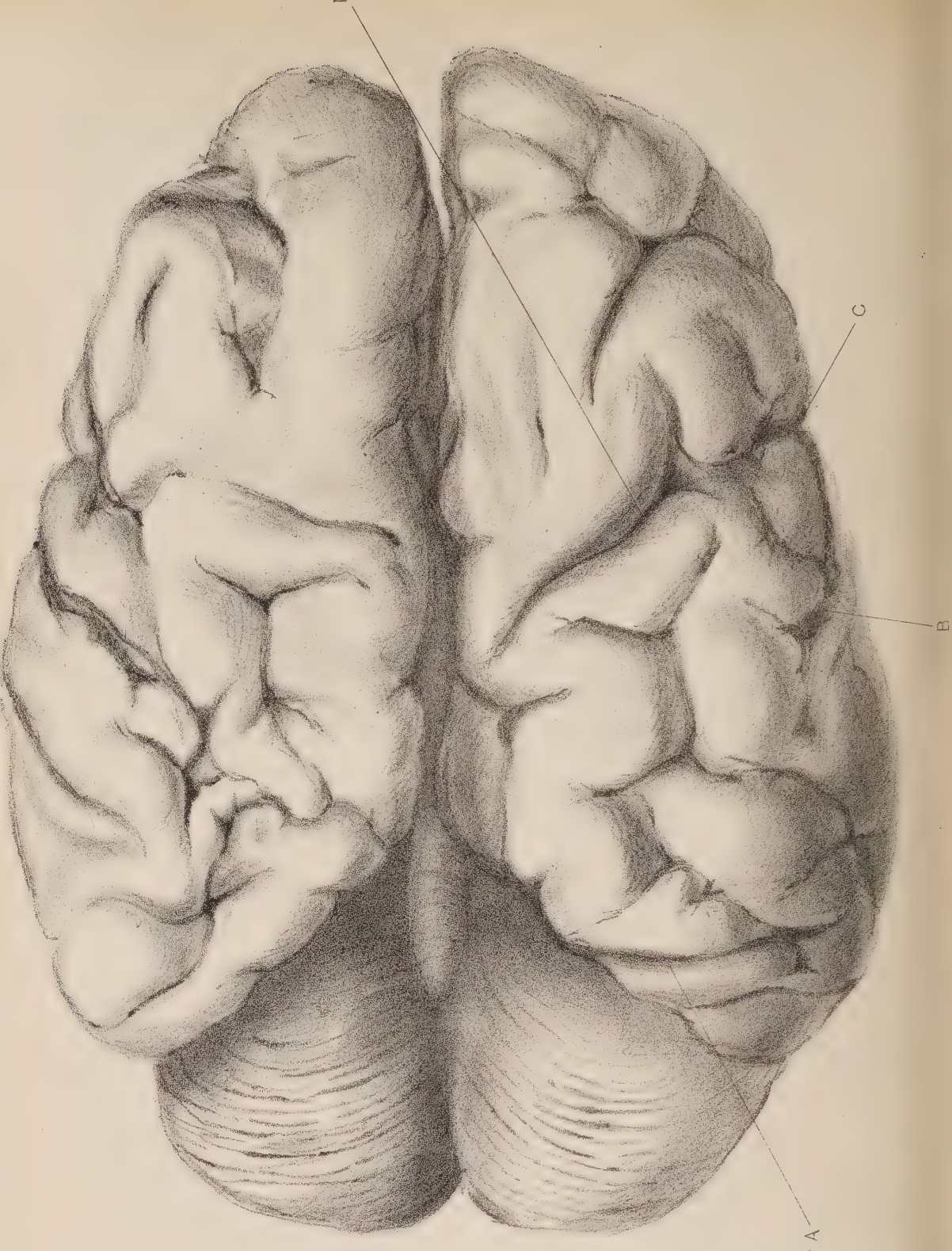
“The cortical layers are not so well defined as in the normal brain. There is a predominance of the round cells common to the second layer, and they are smaller than usual. The pyramidal corpuscles are fewer than normal, and their outline is for the most part rounded. Few have processes, and these are not well-developed. Some sections present a curious honey-comb appearance, due apparently to the degeneration and consequent non-staining of many of the large cells so commonly found in the brains of idiots of low type.”

It remains to add that the thorax and abdomen disclosed evidence of tubercular disease in the lungs, and in the glands of the mesentery. The heart weighed but six ounces; the walls were thin, but the valves competent. The foramen ovale was imperfectly closed, an aperture admitting the passage of a slender probe being found in the thin membrane separating the auricles. The breasts were undeveloped, and the sexual characteristics generally immature.

Remarks.—This case is interesting from an embryological as well as a psychological point of view. The deficiency in the development of the posterior parts of the cerebral hemispheres, corresponds, in certain respects, with other recorded observations of microcephalic brains. Thus, in the remarkable case of Antonia Grandoni, a microcephal, whose head measured only 13 inches in external circumference, it is stated on the authority of Dr. Adriani, that the cerebral hemispheres, themselves 100 millimetres in length,* “were shortened posteriorly, so that the cerebellum was left uncovered for about 70 millimetres. All the cerebral lobes were small; the parietal and occipital were smaller in proportion to the frontal and temporal lobes.” Again, in Dr. Valenti’s case of an idiot, whose cranial circumference was 13 inches 9 lines, Dr. Ireland states† “that the most striking features of the brain are the smallness of the cerebrum compared with the cerebellum, and the imperfect development of the parietal and occipital lobes, as compared with that of the frontal and temporo-sphenoidal.” In the case of Mary X., it is to

* Ireland, “Idiocy and Imbecility,” p. 108.

† Op. Cit., p. 118.



be remarked that the frontal and parietal lobes were those most developed, the temporo-sphenoidal less developed, whilst the occipital lobes were quite rudimentary. This is what one would anticipate from some arresting influence having been brought into play to check the growth of the cerebral hemispheres backward and downward, probably at or a little before the sixth month of gestation. The development of detail, however, would appear to have gone on normally, so far as formative processes were completed, and consequently the convolutions of the earlier-formed portions of the hemispheres are well marked. The frontal regions are comparatively well advanced in development, and this might, perhaps, have been predicated from the manifestation of rudimentary, yet characteristically human, intellectual functions during life. It is interesting to note the aptitude for drill displayed by this girl, as showing powers of observation and imitation, and activity of the motor centres which, according to Ferrier, are found in the frontal and parietal lobes. According to the same authority, the auditory centre is placed in the superior temporo-sphenoidal convolution, and it is at least remarkable that, in this case, defect of hearing co-existed with an ill-developed condition of the temporo-sphenoidal lobe. The phenomena observed during life do not furnish any evidence in support of Ferrier's suggestion as to the relation of the occipital lobes to the visceral sensations, which, in this case, appear to have been normal, though the occipital lobes were rudimentary in character. The sluggish temperament noted, seems to have depended more upon feeble circulation, to which the imperfect state of the heart contributed, than upon deficiency of the nervous system. Speaking generally, microcephalic idiots, whose physical health is good, are remarkable for muscular activity; and this is well illustrated in the brother of Mary X., who is a healthy and nimble boy of 10, with a head measuring 17 inches in its greatest circumference. It may be interesting to add that his twin brother's head measures 21 inches in circumference, and that, while the stature of the imbecile boy is 47 inches, that of his more fortunate brother is 51 inches.

FIG. 1.—General view of Microcephalic Brain seen from above. Actual size. A Parieto-occipital fissure. B Horizontal fissure. C Ascending limb of Sylvian fissure. D Fissure of Rolando.

FIG. 2.—Semi-diagrammatic view of Microcephalic Brain, showing general arrangement of convolutions (right side). F.R. Fissure of Rolando. P.O. Parieto-occipital fissure. F.S. Fissure of Sylvius: 1 Horizontal limb; 2 Ascending limb. I.R. Island of Reil.

A Few Notes on Lunacy in France, suggested by a Recent Visit to French Asylums. By D. HACK TUKE, M.D., F.R.C.P. Read at the Annual Meeting of the Medico-Psychological Society, July 26, 1878.

Having recently visited, and as regards some of them, re-visited many of the French Asylums, I propose to bring under your notice to-day, as briefly as possible, three or four prominent subjects of interest, which more especially attracted my attention. I shall not now attempt to describe the asylums which I visited, but merely to bring into as strong relief as possible those matters in which there is a difference of practice between our own country and France, either generally or in regard to the practice of some celebrated French alienists.

I was on this, as on former visits to the French Asylums, much struck with the number of hours during which the doctors soak their patients in warm water. Twenty-five years ago I witnessed the use of prolonged baths at the Salpêtrière, by M. Falret, the father of the present distinguished physician who bears this name. He eulogised the practice so much, that I hoped to be able to prove its utility in England, but the symptoms which I observed follow the use of the bath for even a period which the French physicians would consider ridiculously short—the exhaustion and the alarming syncope, had the effect on my mind of making me doubt the wisdom of employing this remedy. I am convinced now, however, that these alarming symptoms arose, in part at least, from giving a hot instead of a warm, or rather a tepid bath. The temperature of the French prolonged bath is usually only about 85° Fahrenheit, certainly not above 90°. So it is not likely to be so relaxing as a really hot bath is, after the first effect of stimulation has passed away. Perhaps, also, there is another reason why serious symptoms have appeared. On the occasion of my recent visit to Paris, I went to the Bicêtre, and on accompanying M. Falret in his round, I found that he, like his father and others, was strongly in favour of this method of treatment. I mentioned the dangers which appeared to beset the practice. He assured me that they were altogether exaggerated. “You do not feed the patient well enough while he is soaking,” he said, “Do that, and warm water will not induce syncope.” M. Falret could not give me any figures which would show the number of cases cured or relieved by this treatment.

At one asylum the doctor remarked that he would not unfrequently order a patient into a warm bath during his morning visit, and that there he would remain until he made his visit in the evening. He did not believe that if the patient was properly watched there was any danger in such a course. In fact, the French physicians are astonished at the astonishment which English visitors experience when they see a patient in a bath, where he has already spent some hours, and has still some hours of soaking in prospect. But although a very long period is sometimes prescribed (subject of course to the effect produced), three or four hours are more common. I should state that some of the Paris doctors do not see any advantage in extending the time beyond four hours, and even admit that, in some instances, danger from prostration may attend the longer immersions which others employ.

I should state that, in many cases, I witnessed the patient in the bath without any force being employed to keep him there. In others it is necessary to cover the bath with a piece of wood in which an opening allows of the patient's head being literally "above board." Or a sheet of metal is used, or strong canvas, with the necessary aperture for the head. It may be objected that this is mechanical restraint. So it is, in the same sense as the wet pack, but I think it should be regarded in the light of legitimate surgical restraint, during an operation.

I may add that the opinion of Marcé was strongly in favour of prolonged baths, the use of which he says yields more positive and more constantly favourable results than any other system of treatment whatever—especially when the patient is young and vigorous, and is the subject of a recent attack of acute mania. He was, however, fully alive to the necessity of watching the patient constantly, and objected to prolonging the bath beyond four hours.

It will be seen, therefore, that some difference of opinion exists among the French physicians on this subject, but that this has reference not to the value of the remedy, but to the length of time to which the bath may be prolonged with advantage.

The wet pack (*drap mouillé*) is regarded with much favour by some French physicians in the treatment of insanity. I saw at the Salpêtrière a woman recovering from *Mélancolie avec stupeur*, whose recovery M. Voisin attributed to the employment of this doubtless powerful remedy. Her pulse tracings before and after the treatment were recorded, and

they showed a marked change. She was in the pack for half an hour at a time.

I may say that M. Voisin is one who does not employ the prolonged warm bath so long as many do, but fully believes in its efficacy in calming excitement, lowering the temperature, and inducing sleep.

Another point in regard to treatment I will now refer to, and that is the use of hypodermic injections of hydrochlorate of morphia in the large doses I found M. Voisin employing in his practice at the Salpêtrière, where he showed me patients under the influence of his favourite remedy. M. Voisin is of opinion that the cases in which the most strikingly beneficial results are obtained, are those of melancholia, with or without hallucinations; and maniacal excitement "without congestion." He holds that it is very dangerous in congestive and inflammatory conditions, or where the arteries are atheromatous. He would not think of using it in general paralysis, epileptic insanity, or, in fact, wherever there is reason to suspect organic lesions or active inflammation. He has recorded a case in which, mistaking its nature, he produced very alarming symptoms by the administration of this drug, namely, cerebral congestion and loss of consciousness.

In the cases suitable for this treatment, M. Voisin finds that there is frequently neuralgic pain (especially with women) in some part of the body, the head, chest or stomach, which is closely connected with the mental disorder, and is easily removed by morphia. One of his (female) patients suffered from neuralgia under the lower jaw, and this appeared to M. Voisin to be connected in some way or other in the patient's mind with the desire to commit homicidal acts. She was subject to frightful attacks of passion. Two injections of morphia were followed by recovery. In the same way, he believes that neuralgia may lead to the idea of being persecuted.

As to the dose employed by M. Voisin, he says that five or six centigrams ($\frac{3}{4}$ grain) daily, suffice for mild excitement connected with delusion or hallucination—beginning with $\frac{1}{25}$ of a grain—but that for a condition of intense excitement, it is necessary to raise the dose till it reaches 13 centigrams (2 grains). These doses produce a calm; to cure the patient, much larger doses must generally be used, namely, 20, 30, 40 centigrams (3 to 6 grains), and even in some instances as much as a gram (15 grains) in the course of the day.

As regards this maximum, and doubtless exceptional dose, I can only state what M. Voisin has informed me. It

need not be said that there is no difference between French and English of hydrochlorate of morphia. The view appears to be that the system becomes gradually accustomed to the drug. It may be questioned whether the solution is all absorbed. Putting aside, however, the very large doses, the fact to which I wish to draw attention, is the allegation by so able an alienist as M. Voisin, that the hypodermic injection of morphia does effect a cure in many cases not benefited by other remedies.*

Under this treatment, patients, it is alleged, will sometimes recover in a few days, and M. Voisin says he has been driven to these seemingly dangerous doses from his failure in this mode of treatment by employing too small ones, and allowing himself to be frightened by the violent vomiting of the patient. He certainly acts more heroically than the superintendents of English Asylums would like to do. They would stand in awe of a Coroner's Inquest!

At Bethlem Hospital, where any new remedy is likely to receive a fair trial, I have seen a number of cases treated by this method, and while the results have been various, and in some instances disappointing, decided success has been achieved in others. Dr. Savage has found this treatment to be more useful in melancholia than in mania, especially in its active and simple form, the benefit being greater in women than in men, and in older and climacteric cases than in the young. He did not exceed 2-grain doses, in consequence of the vomiting and other disagreeable symptoms which were produced. In several cases where the administration of morphia by the mouth entirely failed to benefit, the subcutaneous injection was immediately followed by good effects.

So much for prolonged baths and the subcutaneous injection of morphia.

I should have been almost glad to pass over the question which still rages with no slight force between ourselves and the majority of alienists of other countries—I allude, of course, to non-restraint—because I feel there is much danger of our judging the excellence of treatment abroad by one narrow test, instead of taking a broad survey of the whole

* Since this paper was read, the writer has had the opportunity of asking M. Voisin whether these apparently improbable doses are correct, and he assures him that there is no error. A dose is generally given twice a day, at 9 a.m. and 4 p.m. In several cases half a gram has been given at once, and in one case at least, one gram twice a day. One of the patient's arms at the Salpêtrière presented a large swelling at the seat of the injection. The solution used is 1 of the salt to 30 of water.

system pursued, and there is also the danger of criticising foreign modes of treatment, as if ours was necessarily the wisest and the best. Such a course may well excite the annoyance of our *confrères* whether on the other side of the Channel or the other side of the Atlantic. There is undoubtedly an advance in the adoption of the non-restraint system in France. Among the large asylums, it is, for example, warmly adopted in that near Toulouse, under the superintendence of Dr. Marchand. Here I found between 800 and 900 patients, and I only saw one woman, a case of general paralysis, in a camisole, for what may be called surgical reasons. I have often heard it said as a reason for the use of restraint in France, that the French are more excitable than the English, but the authorities at the Toulouse Asylum demur to this being the case, and they are of opinion, like ourselves, that restraint usually increases the excitement. Dr. Pons has done good service at the Nice Asylum, where he found, when appointed, some of the patients chained.

Again, at a new asylum at Aix, with 627 patients, I only saw one man in restraint. On the other hand, at the Pau Asylum, out of 253 female patients there were eight women in camisoles, three of whom were also in restraint chairs. I was told that the average number was six in the day and six or seven at night.

At Charenton, where there are about 560 patients, I saw six or seven men in camisoles, and in the division for the women I counted six in camisoles, and four restraint chairs occupied by patients fastened to them, two being camisoled also.

There appears to have been here no progress, but the reverse, in recent years, in the matter of non-restraint, seeing that when I visited Charenton, 25 years ago, I then found only one male patient in a camisole, and in the refractory division for the women, four patients camisoled and strapped to restraint chairs, and one walking about in a camisole—making a total of 6 in 1853 and 14 in 1878. This is the more to be regretted when Charenton is a State asylum, under the immediate authority of the Minister of the Interior, intended, it is expressly announced, to be a model to other asylums in France. My impression is, however, that it has more occasion to be itself taught by some of these.

At the Salpêtrière and Bicêtre, a quarter of a century has certainly seen some change for the better in the number who are restrained, though this is still considerable. At the for-

mer M. Voisin strongly contended in favour of the camisole, and appealing to one woman whether she disliked it, obtained the reply that she did not. I ventured to ask him whether, when he visited the asylums in England in 1874, he was not convinced of the superiority of the English method of treatment? He said he was not; that, on the contrary, he believed that the patients in our asylums not only had their ribs broken much oftener than in France, but frequently got pneumonia from being allowed to throw their clothes off in the night. He maintained, also, that he had found mechanical restraint employed in English asylums, and that, notably, in one of large size, where he had seen a patient in a seclusion-room "fastened from head to foot like a sausage."

When I visited M. Billod's admirable institution at Vaucluse, I saw six men out of 48 refractory patients in camisoles, of whom three were also in seclusion. Among the women there were four so secured, and I was informed that the average was four or five. As I am now only stating facts about restraint, this is not the place to speak of the many excellencies of this asylum. I hope to do so at a future time.

Brierre de Boismont, now 80 years of age, who forms one of the few links remaining between Pinel and the present generation of medical psychologists, is not a convert to the non-restraint system, and says now what he has said before:—"To go from one extreme to the other is to prepare for ourselves a bitter deception. Philanthropy," he says, "has in this way made itself ridiculous; excess, in everything, is a fault. This is a maxim," he adds, "to which we cannot too strongly recall those who burn with love for the public good." And yet it must be confessed that philanthropy, in spite of its seeming but generous excesses, has many a time removed abuses and inaugurated reforms which otherwise would never have been effected.

M. Magnan strives hard at St. Anne's (Paris), to limit the use of mechanical restraint within narrow bounds, and when I went round with him he severely reprimanded one of the attendants for having secured the legs of a male patient in addition to his arms.

M. Magnan objects strongly to the ordinary camisole, which, he says, forms a part of the arsenal, not of asylums only, but even of ordinary hospitals. He points out that it interferes with the breathing, that it produces excoriations, and sometimes by its pressure lays the bone itself bare, and

causes (for example) necrosis of the olecranon. When camisole in bed, for which he cites Pinel's authority, worse ills may befall the patient. The disciples of this great master have, he says, only too closely followed his directions. The respiration is chiefly abdominal, from the extreme pressure on the chest; in his distress the patient throws out his legs on all sides; his assiduous attendant then secures these to the bottom of the bed; the abdomen and knees are also strongly compressed; the result being that the unfortunate lunatic is asphyxiated. The swollen neck is strangled by the rigid border of the camisole, or the larynx is seriously damaged. M. Magnan says it would be no exaggeration to affirm that the majority of patients who die in restraint, owe their death to the pressure exerted by the camisole during the night. To remedy this evil M. Magnan has invented a strong dress, which he considers ensures perfect mechanical restraint without any of the disadvantages which attend the use of the camisole. (*Illustration shown.*)

I need not, however, describe M. Magnan's dress for a violent or mischievous patient, in detail, as I imagine it is likely to meet with the same fate at your hands as a strait-waistcoat did the other day which a woman was hawking about London and brought for sale to St. Luke's Hospital.

Holding the views which I am sure every one in this room holds in regard to the nature and amount of the restraint I have described as being employed at Charenton and some other asylums—whatever differences of degree there may be amongst us as to extreme views of non-restraint—I think we cannot do otherwise than hope that the frequency of restraint will before long be greatly reduced, if it is impossible to hope that it will be altogether abolished, and that the mischievous restraint chairs (*à siège percé*)—the survivals of the *ancien régime*—will cease ere long to be employed.

My own conviction is that no one can visit the Continental asylums, to the excellent organization and management of a large number of which I bear willing testimony, without being confirmed in his attachment to "the English system"—by which I do not understand one which obliges a medical superintendent to commit the absurd inconsistency of putting a moral strait-jacket upon himself, in saying that under no conceivable circumstances will he employ a strait-jacket for a patient. By "the English system" I understand the exclusion of mechanical restraint as a *necessary* part of the treatment of the insane—a position the exact opposite of

that which obtains in the majority of the French asylums, where it is regarded as *indispensable*.

I could, had time permitted, have commended much that I witnessed in France, and dilated on many other points of interest suggested by my visit to the asylums of that country, from the medical superintendents attached to which I received the most courteous attention, but here I must bring my observations to a close, which are necessarily of a much more limited and imperfect character than I could have wished.

Homicide by a Somnambulist. By D. YELLOWLEES, M.D., F.F.P.S.G., Physician-Superintendent, Glasgow Royal Asylum.

Somnambulism and the conditions allied to it have always attracted peculiar interest, probably because most men have felt that common sleep, although so familiar, is yet a wondrous and solemn thing, and full of mysterious possibilities for each of us. Cases of somnambulism have naturally lost nothing when reported, the observer and the recorder being alike liable to enhance rather than lessen the mystery. The wholesome scepticism which now prevails as to the truly involuntary character of many nervous disorders was formerly less common. We know that some patients will subject themselves to constant suffering and discomfort, or will practise the most patient and painful imposture, for no conceivable object save to be exceptional or to attract attention; and there is no want of charity in suspecting that in some cases the somnambulism was but hysterical simulation or morbid malingering.

The interest is, therefore, great which attaches to a case where the condition was so extreme as to lead to a capital crime, yet so unquestionable that the plea was sustained without hesitation, and the prisoner adjudged blameless. The fatal occurrence was simple and tragic. On the night of April 9th the accused was asleep in bed with his wife and their only child, a boy of about 18 months, of whom he was passionately fond. About 1 a.m. he saw a wild beast of some kind rise up through the floor and jump on the bed to attack his child. He seized the animal, and dashed it against the wall or floor to destroy it. His wife's screams recalled him to himself, and he found to his horror that he had seized and fatally injured his child.

Somnambulism is a condition so obscure and ill-defined, and might be so easily simulated and used as a cloak for crime, that considerations of public safety made it necessary to examine the patient's history very closely. The following record embodies the results:—

Simon Fraser, age 28, is a tall, pale, dejected-looking man. His temperament and aspect are nervous; the chief outward peculiarity is in his hair, which is black and always stands rigidly erect. His general health is usually good. His habits are and have always been steady. He is by trade a saw-grinder, is a good workman, and in regular employment. As a child he was dull and stupid, had nocturnal incontinence of urine for years after the usual age; was very slow at learning in school, and extremely awkward and inept when he began to work. His father thinks that this deficiency still remains, and that there has always been "a kind of want about him." Most of his friends and associates share this impression, and it is decidedly confirmed by a personal interview. Although he speaks quite rationally, and is evidently a kindly well-disposed man, he seems soft and somewhat childish, and is certainly below the average in intellect. This deficiency is not such as to attract general notice, nor to prevent him from earning his livelihood.

Nervous weakness and instability might well be expected from the family history. His mother suffered nearly all her life from fits, and died in one; from the father's description these fits were doubtless epileptic. His maternal grandfather, whom Simon is said strikingly to resemble, also died in a fit. His maternal aunt and her son were both insane and inmates of an asylum. His brother died from convulsions in infancy, and the child whom he killed had been dangerously ill from convulsions about six months previously.

From earliest years Fraser's sleep has been restless and uneasy; he has been troubled by dreams and nightmare, and often spoke and walked in his sleep. If he had been excited or agitated in any way during the day, the circumstances and emotions were always vividly recalled during sleep, and he usually walked. When depressed, which he very readily was, by want of employment or any adverse circumstance, he was also specially liable to attacks of his strange disease.

One of the early instances recalled by his father occurred when he was a mere boy about nine or ten years of age. It was his daily errand to fetch milk from a neighbouring farm, and one night he rose about three o'clock, dressed, got the

milk pitcher, and set off to the farm as usual, being soundly asleep all the while.

He has often been observed performing various motions while asleep, as if engaged at work, and he speaks of one occasion in which he found himself in the timber yard busily moving logs, and only awoke when it began to rain.

About seven years ago his father had charge of a saw mill in Norway, and the family lived on an island there. Simon was much attached to his half-sister, then a little girl, and often warned her against falling into the water. He repeatedly rose in sleep, went down to the landing place and into the water, called her loudly by name, and grasped with his arms as if rescuing her from drowning. The girl was repeatedly roused at night by hearing her name loudly called, and on looking out saw Simon standing in the water near the edge, shouting to her as if she were actually in the water, and earnestly trying to rescue her. Sometimes the water awoke him, but sometimes it did not and he has gone quietly back to bed again without ever awaking at all.

Unless awakened at the time, he remembers nothing whatever about these nocturnal occurrences, although he usually infers from feeling wearied and unrefreshed that he has been walking. If aroused at the time, he is confused and agitated, usually trembles a great deal, drinks water, and goes quietly back to bed again and to sleep. He can then, however, recall the ideas which possessed him, and remembers them in the morning.

He generally falls asleep very soon after going to bed, and the seizures usually take place about midnight or within an hour before or after it. Their duration is uncertain, as of course they are usually interrupted, and thus seldom exceed a few minutes. They recur at very irregular intervals, but he very often speaks and moves in sleep without leaving his bed.

Of late years, and especially since his marriage in 1875, these disturbances of sleep have been more frequent, and have assumed a character very different from mere somnambulism.

On these occasions, having fallen asleep as usual, great terror suddenly seizes him, and he starts out of bed under a vivid feeling that some dreadful evil is impending, that the house is on fire, that its walls are about to crush them, that his child is falling down a pit, or, most frequently of all, that a wild beast has got into the room and is about to attack them. Roaring inarticulately, and in an agony of apprehension, he tears his wife and child out of bed to save them from death ;

or he fiercely chases the wild beast through the room, throwing the furniture about in order to reach it, and striking at it with whatever he can use as a weapon ; or he suddenly seizes his companion by the throat under the idea that he is struggling with the beast. The beast is a wild dog, horse, wolf, or other animal, and often some creature of the imagination more terrible by far.

During the seizures his eyes are widely open and staring, nor can it be said that "their sense is shut." Although heedless of all else, and thus blind to all else, he sees whatever is connected with the paramount delusion. He avoids the furniture in chasing the beast through the room, takes up chairs and tables to hurl upon it, and seizes the nearest weapon to smite it. His wife, who always keeps a dim light in the room during the night, is in the habit, before going to bed, of hiding the knives, and putting the poker out of the way, lest her husband should readily find a dangerous weapon.

The degree to which the senses are awake or active seems to vary on different occasions. Sometimes he merely bellows at and struggles with an imaginary assailant ; at other times he can not only see to fight his foe, but can hear and answer questions, speaking quite distinctly.

Fraser has accidentally injured himself, and has frequently injured others while in this condition. His father, wife, half-sister, fellow-lodgers, and a fellow prisoner in the gaol have all been dangerously assaulted by him, some of them nearly strangled. On each occasion Fraser believed that he was struggling with the beast, and was quite unconscious that he had assaulted any one.

It was in one of these attacks that he killed his child ; he thought he saw a large white beast fly up through the floor, and pass towards the back of the bed where the child lay ; he grasped at the beast, trying to catch it ; succeeded in seizing it, and, springing out of bed, he dashed it on the wall or floor to destroy it. His wife says that she was awakened by her husband roaring and "rugging at her," that he then sprang out of bed, and she followed him, as was her habit on such occasions. In the confusion of such a rough awakening she heard him roaring inarticulately like an animal, and smashing something against the wall. Not finding her child in bed, she looked if it had fallen out, and was horrified to see it stretched, apparently lifeless, on the floor. At her cries Fraser came to himself, and when he realised what he had done ran for water, roused the neighbours, and hastened to get a

doctor, his whole conduct evincing the deepest distress and sorrow.

The child's skull was extensively fractured, and it died soon after the injury.

Fraser was tried at the High Court of Justiciary, in Edinburgh, on July 15th, 1878. On being asked to plead, he said, "I am guilty in my sleep, but not guilty in my senses."

The trial therefore proceeded, and a special defence was lodged to the effect that, at the time of the alleged crime, the prisoner was asleep.

A neighbour, a fellow-workman, and various relatives of the prisoner, were examined, also Dr. Jamieson, of Glasgow, the surgeon who was summoned to see the injured child. Their evidence is summarised in the above history, and need not be repeated in detail. It seemed to the jury so conclusive, that they intimated to the Court that further evidence was unnecessary, as they were unanimously of opinion that the prisoner was not responsible for his act. They were, however, advised by the Court to hear the medical evidence.

This was given by Drs. Robertson and Yellowlees, of Glasgow, for the Crown; and by Dr. Clouston, of Edinburgh, for the defence.

These gentlemen agreed in testifying that when the fatal occurrence took place Fraser was under the delusion that he was killing a beast, and was entirely unconscious of the real nature of his act. They also agreed in thinking that all somnambulists are not insane, and that there is no recognised category of insanity under which somnambulism is included.

The important question was whether, in the wild paroxysms which distinguished this extremely aggravated case, Fraser was or was not technically or legally "insane," for, had he been so found, his committal to a criminal lunatic asylum would have been inevitable, and this would have seemed a peculiarly hard fate for a man who is sane, except for a few minutes of unconscious excitement recurring every two or three weeks.

Dr. Yellowlees described somnambulism as "a state of morbid activity of brain coming on during sleep, of very varying intensity, sometimes little more than restless sleep, but sometimes developing delusions and violence, and amounting really to insanity."

He said that Fraser, in these seizures, "is unconscious of what he is doing, and has no true perception of the world around him, yet he has a kind of consciousness, a sort of mental activity going on, which is not consistent with ordinary sleep."

Somnambulism, in this extreme form, and leading to violence under the influence of delusions, he regarded as "equivalent to insanity."

Dr. Robertson said that "extravagant delusion, high excitement and dangerous conduct constituted insanity," and that the prisoner "passes out of sleep to a very great extent into that condition of temporary insanity."

Fraser's state "is simply an exaggerated degree of somnambulism; he had passed, not wholly, but to a very great extent, from sleep, and that condition of somnambulism constitutes insanity."

When it reaches that stage a person is "practically insane."

Dr. Clouston gave evidence for the defence. He did not consider Fraser's condition insanity, because it occurred during sleep. He said sleep was a physiological condition of unconsciousness, during which the brain rests, and the medical profession have not hitherto called anything occurring then insanity. Delusions entertained by a person in a state of somnambulism have not hitherto been placed in the category of insanity, although they may yet be so reckoned. They, no doubt, arose from the same abnormal conditions as other delusions, but occurred during sleep, and are, therefore, quite different from those engendered by insanity. He had never heard of a case like this before, where a person believed that it was a beast he was attacking. Generally an insane man has no delusions in his sleep; but we can only know this from his own testimony. A sane man may have delusions in his sleep, which, while sleep lasts, he believes to be true. He is not morally responsible when these develop into action, because he is unconscious of the true nature of his act.

Dr. Clouston mentioned as a case which he thought parallel to Fraser's, that of a city missionary, by whom he had been consulted, who when out of health once was greatly impressed and disturbed by seeing the effigy of a murdered man in a waxwork. The same night he went early to bed, fell asleep, and when his wife entered the room, about an hour afterwards, he started up, and seized her by the throat, injuring her considerably, under the idea that she was a robber, who had come to rob and murder him. There was no trace of insanity in that case.

The Lord Justice-Clerk, in addressing the jury, said he supposed they had not the slightest doubt that when this most unhappy and lamentable event took place the prisoner, who was certainly to be pitied, was totally unconscious of the act which

he had done. There seemed to be not the slightest doubt that when he was labouring under this delusion he was in a state of somnambulism, and acting under the belief that he was trying to kill a beast. His Lordship supposed that the account the prisoner gave of this tragic event was a true account. It was a matter of some consequence to the prisoner whether he was to be considered as insane, or simply as not responsible, and his future might be, to a great extent, dependent on the verdict which they might return on the question, whether a state of somnambulism, such as this, was to be considered as a state of insanity or not. But his Lordship did not desire that they should be troubled by settling this point. It was a question as to which scientific authority was not agreed. He, therefore, suggested the following verdict, which was at once and unanimously accepted:—

“The jury find that the panel killed his child when he was unconscious of the nature of the act which he committed, by reason of a condition arising from somnambulism; and that the panel was not responsible.”

The case was adjourned, that some arrangement might be made with the public prosecutor, which should secure the public safety, and prevent the repetition of such a calamity.

Two days later Fraser was set at liberty, an undertaking having been given by himself and his father that he would henceforth sleep in a separate room, apart from any other person.

The question whether Fraser was asleep during these attacks, or had passed from sleep into a state of insanity, was thus conveniently evaded, and the unfortunate man happily escaped confinement in an asylum for criminal lunatics.

It is impossible to regard an undertaking given by Fraser and his father as at all a proper or sufficient safeguard, either for his own protection or that of others. There is no security that the promise will not be broken or forgotten, and no guarantee for the watchful care and supervision which such a malady must always require.

The case is so exceptional that the law does not seem to provide for it, but it would surely have been much wiser and safer to have sent Fraser formally to an asylum, liberating him at once, subject to certain conditions of residence and supervision, and holding him liable to recall, should the conditions be neglected.

Regarding the question from a medical point of view, and apart from legal definitions or legal consequences, there can be

no doubt that, during these seizures, Fraser is temporarily insane. His mind is possessed, and his conduct determined, by absurd delusions, which his reason and judgment cannot control.

His condition differs from mere dreaming in impelling to action of the most determined and energetic kind. It also differs entirely from cases like that mentioned by Dr. Clouston, where a sleeper, who is suddenly awakened in the middle of a dream by some one entering the room, mistakes the intruder for the object of his dream, and for a moment acts under that impression. This is merely a momentary misinterpretation of actual facts, and a similar occurrence might take place at any time from mere terror and apprehension, without giving rise to the slightest suspicion of insanity.

Fraser's delusions, and the conduct to which they impel him, have no such external cause, nor is his condition the less to be regarded as temporary insanity, because it originates during sleep. The controlling power, which should correct and overcome such delusions, may be suspended and inoperative through temporary arrest of function, or it may be perverted and destroyed by organic change, but in either case the condition is a morbid one, and the result in both is a state of insanity.

The degree of mental and bodily activity manifested during these seizures is such that the condition could never be recognised or regarded as "sleep," if it had not chanced to arise out of it. It is quite different from mere somnambulism; it is, and should be called, *Somnomania*.

The only difference between such seizures and an ordinary acute attack of delusional insanity, is in their singular brevity, and their accession only during sleep.

The former peculiarity merely indicates the temporary nature of the condition which gives rise to them, and seems to point to a transient inequality of circulation in different parts of the brain.

The second peculiarity is most significant when taken in connection with the very strong family predisposition to epilepsy, and seems to indicate the very close affinity of these seizures to attacks of nocturnal epilepsy, in which the nervous explosion assumes a mental instead of a physical form.

In many epileptics the fits never occur except during sleep, and such fits, like those occurring by day, occasionally assume the form of sudden and fierce excitement. Except that Fraser is not known to have had an epileptic fit in the usual form, and that ordinary epileptic excitement generally lasts longer and subsides less suddenly, the conditions appear to be identical.

CLINICAL NOTES AND CASES.

Case of Malformation of Genitalia with Insanity. By G. H. SAVAGE, M.D. Lond.

The subjoined case is one of great general interest, for in it we have multiple malformations both in the reproductive organs and also in the rest of the body and head.

This patient was not considered of unsound mind till shortly before her death. The nature of her mental symptoms was closely associated with the malformations.

I purpose first giving a short history of the case, then the conditions found after death, and finally I shall add a few notes about the case and its general bearings.

Elizabeth B., single, 48. No history of insanity in the family. The first symptoms of unsoundness of mind were noticed in January, 1878. This patient was said to have been in general habits and in appearance like other young women; her friends say she was decidedly pretty when 19 years old. At 19 she had a single discharge of blood, supposed to be menstrual; she never had any recurrence of this, and slowly assumed a very peculiar appearance, her features becoming large and coarse, her mouth huge, and her skin rough and masculine. No hair appeared on her face, and none about the pubes, the mammary glands did not develop, and her hands became broad and man-like. She developed in size, and became very large and tall.

Before admission to Bethlem she was in a private asylum, and the doctor there kindly informs me that while there she, on one occasion during the night, tried to take indecent liberties with a female night nurse, and she got into bed with another woman, and said she must have sexual intercourse with her, and tried to effect this in a masculine way.

On admission, the patient was suffering from bronchitis and intractable sickness, she was very helpless, and it was as much as three nurses could do to move her. She had incontinence of urine, the bowels were confined. The only symptoms of mental disease noticed were hallucinations of sight, and probably of hearing. She fancied her mother was in the room with her, and she would address people she supposed to be near. There was no high temperature, and no delirium. It was also a question whether she did not fancy that her food was poisoned, but from her great exhaustion we were unable to push our examination as far as we desired.

She gradually lost power, and died, a week after admission, of bronchitis.

Her general aspect was that of an adult cretin, but there were no real signs of cretinism, no lumps in neck and no idiocy.

Post-mortem. The body presented the general appearance of that of a powerful male; broad chest, large limbs and no breasts. The external organs of generation were those of a woman, large external labia, the right labium exhibited a tumour of the size of a filbert; this proved only to be a mass of fat and connective tissue; the vagina was very large, thin walled and baggy; no clitoris was visible, the meatus urinarius distinct, but surrounded by very few muscular fibres.

On opening the head, the frontal sinuses were found to extend almost the entire height of the frontal bone, and were very wide at the section made to remove the calvarium, the rest of the calvarium was dense and hard. The membranes were normal, and there was nothing to notice in the form of brain or arrangements of the convolutions. The brain substance was also normal in appearance and consistence. On removing the brain, the middle fossæ of the base were found symmetrically studded with large bony prominences, the most marked running for two inches from the antero-lateral part of the fossæ to the centre.

The pituitary body was very large, projecting half an inch above the fossa; the fossa itself was deep, so that the point of the thumb could be completely hidden in it. The body itself was hard and bony, the two clinoid processes were close together, and the basilar process was unusually flat, so that from the posterior clinoid process to the basilar process was almost a perpendicular line, and then the flat basilar process extended straight back. There were no other peculiarities noticed in the head. In the thorax the organs were of large size, the right lung weighing 56 ounces, the left 43, and the heart, which was covered with fat, 15 ounces. There were marked appearances of bronchitis. The liver weighed 96 ounces, the kidneys $10\frac{1}{4}$ and $11\frac{1}{2}$ ounces. In both kidneys were many small cysts, and some wasting of the cortex. The spleen weighed $16\frac{3}{4}$ ounces. The intestines were normal. The bladder was very large and thin walled; it extended far above the rim of the pubes. On passing a sound up the vagina, there was found in the place of the uterus a slight thickening, and the lateral ligaments and ovaries were only to be traced in thickened lines of tissue.

I subjoin the results found by A. Doran, Esq., F.R.C.S., who has dissected the parts for the College of Surgeon's Museum.

The peritoneum over uterus was thick and loaded with fat, so that till dissected off the uterus was not visible. The uterus was found in its natural situation, but was, as Kussmaul describes such cases, infantile, being very small and undeveloped, the cervix hardly to be traced, and the os represented by a pin-hole point, the fallopian tubes impervious, the ovaries atrophied without any signs of their ever having secreted ova.

The vagina loose, thin and baggy, having no rugæ. Bladder large and thin, but not peculiar in any other way.

Mr. Doran intends publishing in detail the report of the anatomy of the parts for the Obstetrical Society.

The chief point of interest from the psychological side is the natural development of the delusion. We have long come to look upon the symptoms of insanity as the development of pre-existing mental states, the result of definite overgrowth or loss of control. Here we have a woman slowly becoming fearfully hideous, obliged to veil her face from the outer world. She naturally believed herself to be noticed, and this natural cause developed into ideas of persecution; the idea that had grown became dominant and uncontrolled, and influenced her whole life. Many cases of persecution grow in the same way. The nervous masturbator, ashamed of his vice, and of himself for indulging it, first looks askance, then fancies others know his weakness and deride him. So we get many of the cases that tell us they are jeered at; and the religiously-educated girl, who gives way to the same vice, and fancies she is no longer natural. Many cases of melancholia again are simply sad out of all proportion to their woes. The woman left by her husband with a small family and expecting another child shortly, naturally becomes the melancholiac who abuses one for extravagance, and wonders who is to pay for all the food consumed.

In the above case the growth of the dominant idea was slow, therefore the prospect of any relief to her mental symptoms was small.

The peculiar shape of the head, associated with bony malformations and over-growths, are interesting, as in this case we got a very typical appearance of cretinism, as far as shape went, and yet no symptoms of cretinism mentally, and this shape of the head was related to over-development of bone, and some German authors have attributed cretinism itself to premature ossification of the base of the skull. The careful dissection of the genitalia have brought the case clearly out of the class of hermaphrodites; it is one of arrest of development as far as a woman was concerned, and after a time a development of the body itself followed the male type. The amorous desires of the patient towards females shows the complete change in the mind and affections, produced by purely bodily conditions.

The case is full of points of interest, but as this is intended merely for a clinical note, I shall not further enlarge upon it.

Notes of a Case of Delusional Insanity, with an Account of the Autopsy. By ROBERT BAKER, M.D., Physician Superintendent of the Friends' Retreat, near York.

The following notes are placed before the profession, in the belief that they report the history of a case of unusual interest:—

A. B., aged 27, a civil engineer, admitted into the Friends' Retreat, York, June 30th, 1874. Patient is 5 feet 8 inches in height, thin, pale and cachectic. Head well formed, expression somewhat wild and unsettled.

His insanity is stated to be of three months' duration, and the cause is said to be partial non-success in his profession.

It appears, however, that the patient's mental condition from boyhood has been unsatisfactory. At school he lived apart from others, considered himself of higher social status than the rest of his school-fellows, and, as a consequence, was placed "in Coventry" by them.

During his apprenticeship as an engineer, his conduct was so irritating to the workmen, that they revenged themselves on him by ducking him in a horse pond.

Whilst employed in his professional duties in India, he was unmanageable, and constantly believing that he was neglected and not appreciated.

On his return from India to England, where he worked his own passage on the ship, he mutinied against the captain, and was placed in irons. The first delusion noticed by his friends was that he was the victim of a conspiracy to prevent him obtaining work.

His mental condition is now characterised by delusions of which the chief is that he is the rightful Prince of Wales, and the secondary is that there is a universal conspiracy to poison him.

He will only answer questions when addressed in full as "His Royal Highness the Prince of Wales." He then commences his answer in the third person by the same phrase, and if any part of the title is omitted he will not reply.

He has written proclamations setting forth his origin and pretensions, and calling upon his loyal subjects to rise to arms in his and the Queen's defence.

The possession of this delusion has completely alienated him from his relatives and friends. He is unsociable, morose, and sullen, and complains of being annoyed by the proximity of other persons.

He eats and sleeps well.

June 14th.—One of the patients to-day encroached on the form where A. B. spends his time issuing proclamations. This so vexed A. B. that, without any warning, he struck the intruder several severe blows with a bagatelle cue.

June 17th.—During last night A. B. tied his sheets and blankets together into a cord 16 yards long, fastening it to his window bar, and having squeezed through the aperture, $11\frac{1}{2}$ by $7\frac{1}{2}$ inches (the Retreat sash squares being made of this small size to prevent the likelihood of any one escaping), let himself down into the garden below. At the next visit of the night attendant he was of course missed.

I was immediately called up, and found him lying on a garden seat, much exhausted, but not seriously injured.

August 1st.—A. B.'s condition is unimproved; he is sullen, vindictive, and often violent in language. He often refuses to speak. At other times he makes complaints, such as "His Royal Highness the Prince of Wales has to complain of poison being put in his coffee."

He now frequently refuses food, believing we are in a conspiracy to poison him; and persists in his refusal until the apparatus for feeding is produced. He is constantly on the alert for an opportunity to escape. He refuses to sit near the other patients, and has needed, since the 29th, the constant supervision of a special attendant.

Sept. 27th.—This patient to-day, whilst out in the gallery garden with his attendant, made a skilful attempt at escape. Seizing a suitable moment, he, by a springing jump, caught hold of the bough of a walnut tree, ran along a branch, gained in safety the summit of the adjacent wall, and jumped into the field on the other side, where, however, another attendant captured him.

Oct. 17th.—He is more talkative. Repeats a made-up speech, in a sharp, irritable tone, having reference to his claim to be universally acknowledged the true Prince of Wales.

To-day, for the first time, he complained that the persons represented in the wall pictures spoke to him.

The same kind of entries continue up to the date of May 1st, 1875, when it is recorded that food had, on that day, to be forcibly administered.

Oct. 19.—This patient, during the past three weeks, has been more than usually savage, morose, and violent, attacking all who come near him.

On the morning of the 16th, he silently (during the intervals between the visits of the night attendant), succeeded in disjoining a portion of his bedstead, barricaded his door, and, armed with a wooden bar, defied any one to enter his room.

Through the fan-light over the door, I directed the stream of water from a fire *extincteur* on to his face, and so completely blinded him, that his blows fell aimlessly.

Gradually the door was opened, and an attendant, protected by having his head covered with a hair mattress, rushed in, and, with assistance, secured the patient without any accident resulting, either to him or the attendants.

Jan. 13th, 1876.—Since the 6th inst., A.B. has refused to take any

food, and therefore has thrice daily been fed through the funnel and œsophagus tube, each morning, with a pint and a quarter of strong beef tea, thickened with a dessert spoonful of corn flour, with the addition of one egg; and in the afternoon and evening with a pint and a quarter of milk prepared in the same way.

He has not spoken for two weeks; is very dirty, passing urine and fæces in his bed.

April 26th.—Patient occasionally takes a meal, but nearly every day requires the tubal administration of food.

Oct. 5th.—Patient has not voluntarily taken food since April 26th, and requires the forcible administration of food thrice daily. He is not losing ground.

Feb. 17th, 1877.—For part of four days the patient has taken food voluntarily, and has been willing to get up and dress himself. To-day he has again needed feeding by the tube.

Oct. 15th.—Since Feb. 17th patient has been forcibly fed thrice daily. His bodily health is as good as usual. His mental condition is unchanged.

Oct. 22nd.—Patient has become so actively violent, fighting so furiously every one who approaches him, that it has been found needful to place him in seclusion.

Each time he hears the medical officer coming to his room to feed him, he gets out of bed, stands in an advantageous position, with his fists doubled for action, and when the door is opened fights actively and dexterously, until overpowered by the four attendants.

He is then held until food has been administered, then, one by one, the attendants leave the room, the last one frequently receiving a parting blow from either the hand or foot of the patient.

It is unnecessary for me to add any more extracts from the Case Books.

For two years and one month this patient was, without intermission, artificially fed three times daily, maintaining fairly good health.

No stimulants of any kind were administered after Oct., 1877, but half-an-ounce of cod-liver oil was added to the food each time.

From Oct. 22, 1877, to May 23rd, 1878, it was deemed necessary, owing to his persistent violence, and exhausting attempts to injure others, to keep him constantly in seclusion. Mechanical restraint was never resorted to; although perhaps in the interest of the patient himself, and certainly in the interest of the Hospital staff, its adoption would have been justifiable; as each time when fed, he fought with homicidal fury difficult to realise, except by those who have witnessed it, the attendants whose duty it was to assist in the administration of food.

It is with a feeling of satisfaction and thankfulness that I can record that, although during this time he frequently succeeded in injuring others, he himself never sustained any injury.

All attempts made to subdue the patient's violence by means of medical treatment, proved unavailing. The subcutaneous injection of hyoscyamin produced dilatation of the pupils, but beyond this had no effect.

On the 23rd of May, Dr. Prideaux (the assistant medical officer), four attendants, and myself, went as usual along the gallery to his room, to administer food to him. As was his custom, on hearing us approach, he jumped out of bed, stood behind the door in fighting attitude, gave a subdued groan, became pale, and collapsed. All fighting power vanished, and he laid back on his bed evidently dying.

There was no struggling, no violence; collapse supervened while he was preparing to fight.

Dulness over the base of the right lung was at once detected; the respirations became increasingly rapid and embarrassed, but no crepitation could be detected.

Almost directly, however, the patient began to cough spasmodically, and a horrible sickening smell was emitted with his breath. This smell rapidly extended from the patient's room along the whole length of the gallery, and was with difficulty neutralized.

I thought it must arise from gangrene of a portion of the lung, but the smell was markedly different from that usual in such cases.

The patient lingered $15\frac{3}{4}$ hours and then died.

The following report of the post-mortem examination has been drawn up by Dr. Prideaux:—

Examination of the body made 33 hours after death.

On removing the skull-cap, the dura-mater appeared normal, and was not adherent to it.

On incising the dura-mater, a considerable quantity of serum escaped from between it and the arachnoid; and the removal of the dura-mater showed it to be strongly adherent to the arachnoid along the line of the superior longitudinal sinus.

The arachnoid was thickened in this situation, particularly at the vertex, where there were several small patches of organised tissue.

The whole of the surface of the brain appeared more vascular than usual.

The sub-arachnoid space was largely distended with serum, the pia mater was not adherent to the surface of the convolutions. The ven-

tricles were large, and contained a large amount of serum, while the brain substance appeared softer, but was not more vascular than usual.

On examining the thorax, there were no appearances denoting fracture of the ribs. On opening it the pericardium was large, and contained about 4 oz. of fluid. The heart was small, but firm. Its cavities and valves were healthy in appearance. There was no fluid, nor any signs of pleurisy in the left pleura.

The left lung was slightly oedematous. There were no signs of tubercle, either old or recent.

The right lung appeared collapsed, and much shrunk. On opening the pleural cavity a quantity of foetid pus escaped, whilst the lung was strongly adherent to the parietal wall of the pleura, at its basal surface.

On examining the lung itself, there was found, occupying the whole of the middle and inferior lobes, a large abscess cavity, lined with a thick and smooth lining membrane communicating with a portion of the pleural cavity by a circular orifice, but that portion was cut off from the general pleural cavity by a wall of circular adhesions.

The depth of the abscess cavity was from $3\frac{1}{2}$ to 4 inches, and its orifice was 3 inches in diameter. Nearly at the bottom, but in the upper wall was a rent or opening into the general lung tissue, about half an inch long, in the neighbourhood of which the tissue was infiltrated with pus, and recently extravasated blood.

The rest of the lung was healthy but oedematous, and presented no signs of tubercle either recent or old.

There was no communication between the pleural and peritoneal cavities, and the liver was healthy.

No further examination was made.

In conclusion it seems to me that this case has been one of unusual interest.

Firstly, this patient, in an active condition of delusional insanity, was kept alive and in fairly good bodily health for more than two years, by the forcible administration of food.

Secondly, the cause of death was unusual. The effort of placing himself in a fighting attitude being sufficient to cause the rupture of the attenuated wall of the abscess of the lung.

This is very interesting from a medical point of view. But I think it is also especially interesting to those who have the care of the insane.

If the patient had died during an active struggle with his attendants, and there had been no post-mortem examination, how probable would it have been that blame would have been attributed to the hospital authorities.

PART II.—REVIEWS.

The Proceedings of the International Congress of Mental Medicine, Paris, August, 1878.

The International Congress of Mental Medicine proved a success. To that end nothing was wanting on the part of the Medico-Psychological Society of Paris which inaugurated it. The *séances* lasted from the 5th to the 10th of August, but the Congress more properly terminated its work on the 12th, with a "scientific excursion" to the asylums in the neighbourhood of Rouen. The first business consisted in the appointment of officers, viz.:—President: Dr. Baillarger; Vice-Presidents, Professor Lasègue, Drs. Semal, Echeverria, Mierzejewski, Giacchi, and Hack Tuke; General Secretary; Dr. Motet, assisted by Dr. Ritti.* The Under Secretary of State for the Interior (M. Lepère), and M. Calmeil, the well-known author of the classical work on General Paralysis, sat on the right of M. Baillarger at the first sitting of the Congress. The President, full of years and of honours, delivered a short but appropriate address. Papers were then read bearing upon the question of that day's programme, namely, "*Des mesures à prendre à l'égard des aliénés dits criminels*," by Drs. Auzouy, Billod, Dagonet, Moring, Lunier, and Hack Tuke. The subject was discussed in a very animated manner on the following day. There are defects, it seems, in the Lunacy Law of 1838, which it is desired to amend, but there is, a distinguished Paris physician remarked in conversation, a conservative feeling in France, approaching fetishism, which renders it exceedingly difficult to change a law when once it is in force. Indeed, it cannot but be a matter of surprise that the law which (in addition to the Code Napoléon), now regulates lunacy in France is forty years old. It should be added that it is, on the whole, a remarkably good law, and very creditable to the legislators of that period. It is inevitable, however, that certain changes should become necessary. Hence the discussion upon them at the Congress. The best mode of providing for criminal lunatics

* The "Comité d'organisation" consisted of the President, MM. Blanche, Dumesnil, J. Falret, Lasègue, Lunier, Legrand du Saulle, Motet and Ritti. The meetings were held in the hall of the "Société d'Encouragement pour l'Industrie Nationale."

now attracts much attention in France, and there is considerable difference of opinion in regard to it. With the exception of the *Sécurité* at the Bicêtre, where a few lunatics are confined who have been sentenced to a short term of imprisonment, no separate provision was made for criminal lunatics until two years ago, when certain buildings at Gaillon (Eure), connected with, but isolated from, the House of Correction, were appropriated to this purpose, accommodation being made for 130.* Provision is required for about as many more for the South of France. Gaillon only receives those who have become insane while in prison; in this respect differing from Broadmoor. In the opinion of M. Lunier and the other Inspectors of Asylums, this was the proper course to pursue. It involved little expense, and from the information which was at the time obtained regarding the construction of Broadmoor, they did not feel encouraged to recommend the erection of a similar building. Some of the French physicians oppose this conclusion, and take exception to having any special institution of this kind; others hold that enough has not been done, and that it would have been better to erect a building with arrangements as complete as those of Broadmoor, and altogether independent of a prison. A paper was read entitled "*Statistique de l'infirmerie spéciale de Gaillon*," by M. Hurel, the physician, which contained valuable information in regard to this attempt to provide for lunatic criminals. We shall give a *résumé* of it in a future number.

We cannot do justice to M. Lunier's paper, but may observe that after pointing out that criminal lunatics (*aliénés criminels*) include two distinct classes—those who become insane after their condemnation, and those who have been recognised as insane with or without trial—he stated that those who have escaped punishment on the ground of insanity are, in France, sent to the ordinary asylums, a course admitted to be injurious, on account of the mixing with other patients and the want of sufficient surveillance. M. Lunier, therefore, wishes them to be placed in some asylums or quarters of asylums, specially adapted for very dangerous lunatics, "*qui sont la terreur du personnel de nos asiles*." He thinks there is much yet to be done in regard to the admission and discharge of criminal lunatics. When an accused is the

* It would be possible, we understood, to provide if necessary for 200, but at the present time there are only about 80 inmates. This asylum is only for those condemned for more than one year. No provision has yet been made for females in France.

object of an "ordonnance de non-lieu" or of acquittal on the ground of insanity, his lot is left to the decision of the administration of the Department which, *in the majority of cases*, places him in an asylum. But this is not obligatory—there is no fixed rule in the matter—and this M. Lunier considers disastrous. So, again, as respects his discharge. Nearly always the Prefects order it when the physicians notify that the patient is cured, but each "chef de service" has his own views and mode of action. Some detain the patients almost indefinitely; others restore them to liberty as soon as the crisis is over. They ought not to be set at liberty "without the intervention of the magistrate." M. Lunier characterised this divergence in the mode of interpreting facts and treating criminal lunatics who have equal rights, as "deplorable." He is also of opinion that in France, in order to avoid the conflicts which will take place, if the patients are not set at liberty without the intervention of the magistrates, between the superior administration and the general councils, the criminal insane should, like insane criminals, be cared for at the expense of the State.

Several papers on other subjects were subsequently read, namely, "*De la meilleure manière d'établir la statistique des causes de l'aliénation mentale*," by Dr. Hack Tuke, and "*Résultats obtenus dans les Colonies de Fitz-James et de Villiers*," by M. Labitte, of Clermont (Oise). Of these colonies it may be briefly stated that they are on the estate of the brothers Labitte, who have had a private asylum for many years at Clermont, and have, in addition to some 300 wealthy patients, a large number of insane belonging to several of the departments. These they employ in large numbers in the fields. There is, it is true, nothing new in this, but the proprietors have carried out the system of agricultural work to a larger extent than elsewhere, and in this respect have performed an important service for the insane. There are about 1,500 patients in this asylum, and 1,260 acres. It is the most important private institution in the whole of France, on account of its large contract with the departments for their pauper lunatics. Some criticism made upon this agricultural colony arose out of the considerable distance of the annexes from the central asylum, but much praise is awarded to the brothers Labitte for their practical energy.

During this *séance* the tranquillity of the proceedings was broken by a member of the Congress, whose name did not appear on the programme, reading an essay, in which he

vigorously attacked the Inspectors of Asylums. One of them protested, but in the first instance the President ruled that, as the Congress was not responsible for the opinions expressed by the speakers, he should proceed. However, when he grew more violent in his language, M. Lunier declared that what he said was a calumny, upon which M. Baillarger put it to the meeting whether he should be allowed to continue. A large show of hands decided that he should not, and the *séance* closed rather stormily.

On the following day a visit was paid to the Asylum of Sainte-Anne (Paris). English physicians interested in asylums expect to find a farm here, for "la ferme de St. Anne" was once famous, thanks to Ferrus, from being appropriated to the patients of Bicêtre. Now the visitor looks for this farm in vain. A portion of the land was utilized by M. Hausmann for the wants of Paris, and the remainder is nearly covered by the buildings of the Asylum. In this particular he proved anything but a friend to this Saint. The great interest of the Asylum consists in its providing a Bureau of Admission, through which filter cases to other asylums or other buildings on the premises, for which the patients are deemed suitable. There were 50 patients in this Bureau when visited by the members of the Congress. They do not stay there more than one or two days. Contiguous to it is the "annexe" for acute cases, delirium tremens, for foreigners, and for those who will be transferred to asylums in the departments—in all 200. The other buildings contain 620 patients, equally divided between men and women. The Bureau and the Annexe are under the direction of MM. Magnan and Bomhereau; the other establishment under MM. Lucas and Dagonet. It is unnecessary to say that every attention was paid to the visitors. The Bureau appears to be a little different in its working from what was originally intended. The idea was to have a provisional establishment, in which patients would remain only long enough to be examined, and to have the legal formalities executed. By this means a sojourn in the Prefecture of Police (to which naturally the patients and their friends had a great dislike), would be avoided. The wisdom of placing it in contiguity with an asylum is doubted by some. It is urged that it should have been distinct and distant. It is thought to have become too much part and parcel of a lunatic asylum, in which those who enter it undergo treatment. But, in fact, as we shall see, the Prefecture de Police is still, to a large extent, the first

place of reception. At the same time, admitting that the original intention has not been fulfilled, this Bureau must be a great boon. After visiting Ste. Anne's, the members of the Congress assembled at the Infirmerie Spéciale of the Prefecture de Police, on the invitation of Prof. Lasègue and M. Legrand du Saulle, in order to obtain information on the mode of admission in the "Service des Aliénés" there. It appeared that, during last year, 2,595 persons had entered. Of these, 1,330 were sent by the Commissaires de Police; 606 were arrested in the streets; of the remaining number only 79 were admitted after indictment. Of these, 474 were not regarded as properly insane; 2,067 were transferred to the Asylum of Sainte-Anne; 42 were sent to one of the hospitals; 11 were placed in private asylums, and 1 died. It appears that in 665 cases, or 25 per cent., the condition of the patient was attributable to alcohol, an important fact to know, when one witnesses the apparent sobriety of the Parisians. In addition to the above admissions, it should be stated that there were placed voluntarily, during the year, 764 patients in private asylums, and that there were 499 "placements d'urgence" of patients coming out of the hospitals; making a total of 3,858. The Prefect of Police sends the person to the Director of the Dépôt, requesting him, in a printed form, to admit A. B. The Director signs a statement that he has admitted him "pour cause de l'aliénation mentale." When transferred, the Chief of the Bureau orders that, in conformity with the law of 1838, he shall be transferred to an asylum, to be there treated for mental disease, which has been established by the procès-verbal and a medical certificate. This certificate states that A. B. is "dans un état mental qui exige son placement dans un asile d'aliénés."

In the afternoon of this day, the subject upon which essays were read was "The Clinical Varieties of General Paralysis." M. Falret contributed a paper, characterised, as was to be expected, by ability and freshness. M. Mordret read a paper, "*Sur la fréquence et les effets de la congestion cérébrale chez les aliénés et plus particulièrement chez les paralytiques généraux*," and M. Doutrebente on "*Des inégalités de dilatation pupillaire dans la paralysie générale*." These papers will, no doubt, be published. We shall not attempt to report them.

In the evening, the President entertained the members of the Congress at a soirée at his house.

On Thursday, August 8, an excursion was made to the Vaucluse Asylum, within an easy railway distance from Paris,

on the Orleans line. M. Billod is the well-known and able superintendent. It is of modern construction, situated in a well-wooded and beautiful district, watered by the river Orge. The special feature of this Institution is the colony of young idiots established on the grounds. Provision is made for 150, but there were only 70. It was about five years ago that the Department of the Seine decided to appropriate certain buildings of the farm of Vaicluse to this object. They are well adapted for the purpose. For this colony 25 acres are set apart. There is a refectory, dormitories, schoolrooms, an infirmary, and excellent provision for baths. Good progress has been made in writing. The boys wear the uniform of a blue cap, jacket, on the collar of which C. V. is visible in red letters, white trousers and blue tie. Forty went through military drill in a spirited manner, the drummer being an idiot of a very marked type. In this rapid sketch of the proceedings of the Congress, we can only seize, as in this instance, the prominent and distinctive points of interest, but it would be an injustice to M. Billod to pass on without according well-merited praise to him for the general condition of the asylum he directs, the cleanliness of the patients, their rooms and beds, and the order of the establishment. Strong and efficient hands evidently hold the reins.

Among the papers read on this day were—“*Etudes de thermométrie dans l'aliénation mentale*,” by M. Aug. Voisin, who will contribute an article upon this subject in a future number of this Journal; and “*Recherches sur l'idiotie*,” by M. Mierzejewski, an essay which excited much interest, and was warmly applauded. It was illustrated by casts of the brains of idiots and certain animals.

In the evening, M. Blanche entertained at dinner some members of the Congress, in a very hospitable manner.

On the following day, Aug. 9, the Congress visited the Asylum of Ville-ivard (Neuilly s. Marne), not far from Vincennes, superintended by M. de Lamaestre, who, at one of the *séances*, read a paper. M. Doutrebente is the assistant physician. The salient feature of this Institution is the excellent provision made for the higher and middle classes, at a moderate charge, viz., for the 1st class, 2,400 francs per annum; 2nd class, 1,800 ditto; 3rd class, 1,200 ditto. The first-class patients alone have a private bedroom; the second-class occupy a room with two or three beds, and the third the dormitories. There is also some difference in the food of the three classes. The rooms are handsomely furnished. The

whole establishment appeared to be in admirable order, and to reflect great credit upon M. Lamaëstre.

In the afternoon some very important papers were read on Transitory Insanity in Relation to Legal Medicine. Prof. Lasègue delivered an able address on the subject, and Echeverria's "*Considération clinique sur l'épilepsie*" was full of instructive practical information drawn from the writer's large experience of epilepsy. The paper, which bore mainly upon "Epileptic Insanity," does not admit of condensation.

In the evening M. Lasègue entertained the Congress at a soirée. M. Luys gave a very interesting demonstration of the changes occurring in the cerebral convolutions in certain forms of insanity, illustrated by brains hardened in the following solution:—Eau, 1000 grammes; acid azotique, 20 grammes. The brain to be immersed for from 13 to 15 days. The part affected is then indicated as usual by being painted a bright colour (in oils).

On Saturday, the 10th, the Congress was invited to visit the Exhibition, to meet the Minister of the Interior, and examine objects illustrative of public institutions, collected in a portion of the building specially devoted to works over which he presides. He was represented on the occasion by the Under Secretary of State, M. Lepère. Plans and models of some of the principal asylums were exhibited. Ugly iron fetters and handcuffs were displayed, with the significant label, "*Il y a 50 ans.*" Near, was a photograph of a picture exhibited among the French paintings, by Fleury, representing Pinel unchaining the maniacs at "La Salpêtrière en 1795" (*sic*). It is usual to speak of this great deed having been accomplished at the Bicêtre, and his family have shown, some years ago, that the correct date was 1793. Under "*Aujourd'hui*," the treatment of the present day was represented by a camisole or maillot, and models of seclusion and padded rooms. A bath for hot and cold water, allowing of the safe entrance of the former through perforations (similar to those in use at Caterham, &c.), was exhibited; as also photographs of the prolonged baths, and the contrivance by which the patient is retained there, in use at Charenton. A better "exposition" for the Congress could not have been devised. To do it justice several visits would be necessary.

During the last *séance*, which took place in the afternoon, among the papers read were, "*Anatomie et physiologie cérébrales dans leurs rapports avec la pathologie mentale*," by

M. Fournié; "*L'hérédité morale*," by M. Fournet; and "*Patronage des aliénés*," by Herr Dr. Brosius, who, some years ago, translated into German, Dr. Conolly's work on Mechanical Restraints.

At the close of the Congress, Dr. Hack Tuke, speaking on behalf of the foreign alienists, cordially thanked the Medico-Psychological Society of Paris for having proposed and carried out the International Congress, for their hospitality, and for the scientific excursions to the asylums in and near Paris, which had been so well planned. Especially were their thanks due to the indefatigable Secretary, M. Motet. Those who had met in that room should know of no rivalries but those which spring out of the desire to benefit humanity, and especially those unhappy persons who have lost their reason. Might the motto of their specialty, in all nations, be the words which he had seen inscribed upon the façade of the Asylum of Ville-Evrard—"Caritas et Scientia."

In the evening the members sat down to a Banquet in the new and magnificent Hôtel Continentale, presided over by Prof. Lasègue (in the absence of M. Baillarger). The Under Secretary for the Interior (M. Lepère) was present; also M. de Crisenoy, Directeur de l'administration départementale et communale, De la Morinerie, Loiseau, Constans, Frank, &c.—sixty-six in all.

On Monday, the 12th, an excursion was made to the Asylums of Quatre-Mares and St.-Yon, near Rouen. A fine new asylum is nearly completed, to which the patients now in the old Asylum of St.-Yon, in Rouen, will eventually be removed.

The construction most in favour with the French asylum-physicians is the Pavilion plan, and may be thus described, subject, of course, to some modifications in different asylums. The premises are composed of pavilions with verandahs, airing courts, open corridors of communication, a building devoted to the administration of the asylum, and a chapel. The ground floor of the pavilions contains the *salle à manger* and the *salle de réunion*, and a kitchen, or rather scullery, for all the cooking is done in the central kitchen. Dormitories occupy the first storey, and sometimes the *rez-de-chaussée*. The pavilions ("pavillons") are situated in lines, equi-distant, and allow of classification according to the mental condition of the patients, the tranquil, demi-tranquil, agitated and demi-agitated, the epileptic, the dirty, with an infirmary. For the most violent, cellules are usually provided at some

distance from the pavilion or block for the “agitateés.” The word “block” would, however, convey a false impression if it were supposed to resemble those of Caterham and Leavesden. The structure is much lighter, and altogether more agreeable to the eye. The only criticism one feels inclined to make in going over one of the French asylums which owe their original inspiration to Esquirol, is, that the uniformity of the plan is a little monotonous, and the squares or enclosures formed by the blocks and galleries give an uncomfortable impression to the visitor of being imprisoned within somewhat circumscribed and rectangular bounds—a remark which would not apply to the courts situated on the outer side of the buildings, which command a fine view when the asylum is in the country. Another criticism may be permitted, namely, that the cellules are usually too isolated and distant.

M. Dumesnil, Inspector of Asylums, was formerly the superintendent of Quatre-Mares. In the absence of the present superintendent, Dr. Achille Foville, Dr. Rousselin (superintendent of St.-Yon) showed the members over the Institution, entertained them at a luncheon, and, in short, devoted himself throughout the day to their convenience. Dr. Foville's absence was occasioned by the recent death of his distinguished father, at an advanced age. As the author, many years ago, of a remarkable work on the *Convulsions of the Brain*, with beautifully executed plates, the memory of the former physician of Charenton deserves a tribute of respect, and, from those who knew him, of affection also.

We have heard the French compared to the Greeks. In one point, however, they differed on this occasion. The latter, it is said, held that in order to do anything well, you must first dine well. The French, on the contrary, made the members of the Congress dine well, in Rouen, at the *close* of their labours.

And so ended the International Congress of Mental Medicine.
D. H. T.

Friendly Talk with a New Patient—Visiting Day at the Asylum—Work in the Wards by Asylum Attendants. By
Rev. H. HAWKINS.

Although in some respects outside our immediate groove of action as medical men, we cordially welcome the series of little books, of which these form a part, written by the estimable

Chaplain of the Colney Hatch Asylum. Mr. Hawkins is not one of those asylum chaplains who regard the office in a perfunctory light, and simply go through their work mechanically, as a dull necessity, conscious that the good done to the patients is infinitesimally small, and are hard set, as the year comes round, to prepare their Report. We sincerely pity such, and should recommend them to quit a post for which neither nature nor grace has fitted them. We give this advice deliberately, because we hold that, rightly performed, the duties of an asylum chaplain are of a most useful and honourable kind. So long as the physician-in-chief is in no degree or way interfered with, and everything is done with his sanction, much good may be and is effected. Where, subject to these guards, chaplains throw their energies into their work, and feel a real interest in individual patients, they prove most valuable aides-de-camp to the physician. When we place before us our *beau idéal* of an asylum chaplain, and compare it with the average actual fulfilment in flesh and blood, the contrast is rather greater than we could have wished.

In Mr. Hawkins we recognise the right man in the right place; and, so long as judgment and discretion, combined with a full recognition of the physical disease under which the insane labour, are preserved, the utility of such efforts as those made by him, and of which these tractates are the outcome, must be great, and ought to be hailed with satisfaction by Medical Superintendents. As divines and doctors have, in this respect, one common object in view—that of restoring the diseased cerebro-mental organ to healthy action—they ought to be able to work harmoniously and successfully together. Such advice as the following, in “Friendly Talk with a Patient,” is judiciously and simply expressed: “One very important means to secure cheerfulness is employment. If you would be cheerful, employ yourself. Avoid idleness. Laziness is accompanied by melancholy. Seek for something to do. Any harmless employment is better than none. Even the commonest occupation about the room would afford you an opportunity of usefulness, and prevent your thoughts from dwelling too much upon yourself and your troubles.” Again, “Conform cheerfully to the rules of the establishment. No institution, large or small, can be well ordered unless its regulations are observed; and you will not only contribute to the well-being of the community, but also promote your own comfort, and gain the respect and regard of others, if you readily fall in with the rules which have been laid down for the common advantage.” The

advice to those visiting the Asylum is also judicious, and often much needed: "Well-meaning, but inconsiderate visitors, sometimes do their friends harm by thoughtless conversation. Do not make your friend's heart ache by referring to his own troubles, unless there is real necessity to do this. Do not anywhere, but especially in an asylum, be what is called a 'croaker.'" These extracts will serve to convince our readers that Mr. Hawkins is a sound counsellor, both for patients and their friends, and that the Superintendents of Asylums might advantageously possess themselves of copies of his books for distribution. That bearing the title "Work in the Wards," is full of wise counsel. We sincerely wish them a large circulation.

De quelques accidents de l'épilepsie et de l'hystéro-épilepsie.
Par EMILLE BOVELL, M.D. (Paris.) Paris, 1877.

This production is one of the many evidences of the extraordinary amount of interest which epilepsy and hystero-epilepsy excite at the present day. In France, England, and America the attention directed to the character and pathology of these affections has produced a crop of works on the subject. In Paris the researches of the distinguished Charcot have thrown a special charm over the study of hystero-epilepsy. Probably they have had some influence in suggesting the inquiry undertaken in the brochure whose title heads this notice, the main object of which is to investigate certain complications of the epileptic crisis, with and without hysteria. The author gives a *résumé* of observations already published in regard to congestions following—(1) Lesions of the brain and cord from various morbid causes; (2) traumatic lesions of the brain or cord; (3) experimental lesions; (4) hysterical attacks. In hysteria and epilepsy little is known of these morbid phenomena, because death rarely follows an attack of hysteria, and because those phenomena of an epileptic attack which are studied by the author have received disproportionately little attention. This portion of the essay contains a number of interesting cases, in which visceral congestions, succeeding the above-mentioned states, assume the form of renal, hepatic and pulmonary disease, joint-affections, cutaneous disorders, rise of temperature in the parts paralysed, &c. These cases are followed by another series, in which albuminuria, glycosuria, retinal congestion

with dilated pupil, cutaneous affections, and rise of temperature occurred in connection with epileptic seizures, or with the allied condition of hystero-epilepsy. The author asks, by what mechanism these different phenomena are induced, and handles the question in a lucid manner. The rise in temperature, when it occurs in the course of epilepsy, is attributed to paralysis of the vasomotor nerves. Congestions of various parts, also, whether of the skin or the viscera, notably ecchymoses, are referred, not to asphyxia, but to vasomotor disturbance. In regard to the former (the temperature) it is observed that the explanation drawn from exaggerated and prolonged muscular contractions while capable of accounting for some would not by any means account for all of the elevation which has been discovered by competent observers. Thus violent muscular exercise may raise the heat of the body from 5° Cent. to 1° above the normal height; but in an epileptic attack the temperature may reach 41° Cent., whilst with hystero-epileptics, the rise is not more than to $38^{\circ}.3$, although the muscular contraction is not less violent or prolonged than with the former. "It is necessary, therefore, to invoke another cause besides muscular spasm to explain the considerable difference which exists between these numbers. It appears reasonable to admit that the vasomotor apparatus, which seems to take part often, if not always, in the cerebro-spinal affections of epilepsy, as in hysteria, is more profoundly affected in a neurosis, which (as clinical observation demonstrates) most profoundly changes the nervous centres which it affects" (p. 72).

As respects the explanation of congestions by asphyxia, this is obviously based upon the arrest of respiration, which occurs for a longer or shorter time in a fit; the blood ceasing to be oxygenated, circulates less freely in the lungs, and is thrown back upon the venous system, which, of course, becomes surcharged, and congestions and even hæmorrhages may be the result. It is argued that if the cause were always to be found in asphyxia, congestion and hæmorrhage should only be found or produced during and immediately after an arrest of respiration. This, however, as is well known, does not hold good in the majority of cases, but, as in two reported by the author, they were the *avant-coureurs* of the crisis. The conclusions at which the author of this monograph arrives on the whole subject are, that with epileptics there arise certain phenomena which may be called congestive complications (albuminuria, glycosuria, ecchymoses, &c.). By their side there are other phenomena, as dilatation of the pupil, pallor,

horripilation, &c., which must be connected with the former. In short, they are no less the result of functional lesion of the sympathetic. Again, there exists an analogy between the congestive complications of epilepsy, and those which are seen in patients suffering from traumatic and other lesions of the brain and cord; an analogy not only in regard to the symptoms, but the mechanism by which they are produced. The congestive complications of hysteria may also be illustrated by corresponding occurrences in experiments upon animals. Echeverria's recent researches into the morbid appearances found in epileptics after death favour the view that the sympathetic is implicated in epilepsy.

In consequence of the narrow limits imposed by the author, the subject, which is treated in a manner at once cautious and logical, is necessarily only glanced at. It is, however, in the same direction, and in the same scientific spirit that alienist physicians must work in order to place the physical signs of epilepsy in the obscure and perplexing forms in which it is frequently presented to them, upon a sure and dependable basis. For them nothing is, at the present time, more important, in a medico-legal point of view, than to ascertain the delicate symptoms which show not only that the patient labours under an attack, however slight, but also *that an attack has recently occurred*. This remark applies, of course, to cases of mania transitoria. The evidence of the patient and his friends may be wholly insufficient to establish an epileptic attack, but an immense stride will have been made when we can, by physical signs alone, persisting for some time after a seizure, declare with certainty that it has taken place. Evidence of this kind confirmatory of an opinion (formed on other grounds) that a man accused of, for example, a homicidal act, was at the time he committed it, the subject of epilepsy, however fugitive in character, must always be of great moment in a Court of Law.

A Manual of Necroscopy, or a Guide to the Performance of Post-Mortem Examinations. For the use of Students and Practitioners. By A. H. NEWTH, M.D. pp. 157. Smith, Elder, & Co., London. 1878.

In the education of a medical student few things are of more importance than a thorough instruction in morbid anatomy. It is the basis and groundwork of clinical medicine, and without a practical knowledge of the subject, it is

scarcely too much to say that he will not become a successful diagnostician. The necessary training can only be obtained while a student, for the opportunities afforded in general practice are few and far between; hence the greater need for systematic teaching in the schools. It is, in reality, much better that the student should be able to recognise the coarse lesions in the post-mortem room than to be proficient in cutting and mounting sections. It is morbid anatomy more than pathological histology which will be of ultimate service. Unfortunately, in the absence of systematic instruction, such as is given in some of the continental schools, the English student is allowed to pick up his knowledge of this subject in an irregular way as best he can; and many, we fear, are licensed without ever having performed an autopsy. The imperfect reports of post-mortems frequently met with in the journals, and the nature of the pathological evidence sometimes given at the coroners' courts, point to a deficiency in the training of medical men in this respect.

The small manual of Dr. Newth will be found a useful guide to students beginning the study, and may serve also to refresh the memory of the busy practitioner who has an autopsy to perform. Directions are given about the inspection and examination of the body in ordinary and medico-legal cases, and under the physiological systems a brief summary of the chief alterations met with in the various organs. In this respect the arrangement is similar to that in Orth's "*Compendium of Pathological Anatomy*," recently published, to which, indeed, this manual might serve as an introduction.

The importance of rigidly following a definite method in the examination of the organs is, perhaps, not sufficiently insisted upon. Those who have had the privilege of being instructed by Virchow in the practical details of necroscopy, and are accustomed to follow his system—as laid down in his *Sections-Technik*—fully appreciate its importance, more particularly for students.

There are one or two points with regard to the method of examining the organs which require notice. In the first place, the directions given for opening the heart are somewhat imperfect, and, if followed, would result in a very clumsy dissection of the organ. The directions are—"Open the heart by a V incision, with scissors which are inserted near the apex, one cut passing along the anterior groove, the other along the outer border; begin with the right ventricle." And then, after directions, to examine the contents, &c.,

“pass one blade of a long pair of scissors up the infundibulum of the aorta, and divide where most convenient.” It must be confessed that this is the usual way; but a much better plan is to open the right ventricle by an incision passing parallel to the septum, round the whole extent of the chamber; in the left ventricle the first incision passes parallel to the anterior inter-ventricular groove, when, on separating the lips of this incision, the two papillary muscles are seen attached to the anterior and posterior walls of the chamber; the knife should be inserted between these and a V portion of the wall cut, which has connected with it the anterior papillary muscle and all its chordæ; while the posterior and its tendons remain with the piece of the ventricle attached to the septum. In this way a beautiful demonstration of the mitral orifice and segments is obtained, very much better than if the incision in the left ventricle is carried round the septum. Again, in opening the arterial orifices, it should never be where “convenient,” but *always* between two semi-lunar valves. How often is a good specimen spoilt by carelessly slitting up the aortic orifice; whereas in almost all cases, with a little care, the knife or blade of the scissors can be inserted between the valves, any lesions of which are thus unmolested.

In dissecting the abdominal viscera, the stomach, duodenum, and liver should in all cases be removed together, so as not to disturb the region of the gastro-hepatic omentum, and to permit of a careful inspection of the structures contained in it. A few additional explanations as to the technical details in the removal and inspection of organs would enhance the value of a second edition.

“As an index to point out what is likely to be found, and to help in arranging the fresh facts which are certain to be observed at every necroscopy,” this little work will prove of value to the student, and as such we can cordially recommend it.

Cyclopædia of the Practice of Medicine. Vol. XIV.: Diseases of the Nervous System and Disturbances of Speech. By Professors A. EULENBERG, NOTHNAGEL, H. VON ZIEMSEN, JOLLY, KUSSMAUL, and DR. J. BAUER.

In our last number we noticed the first part of this volume. Kussmaul's most erudite, original, and elaborate treatise on Disturbances of Speech is so complete in itself,

that we prefer to notice it separately. We confess, however, that the epitome of his views which we proposed to make for our readers we have found simply impossible. The whole is so compact, and hangs so closely together, that it defies satisfactory abbreviation.

Beginning by an enquiry as to what articulate speech is, he describes it as a movement of expression, and more specifically by what is clumsily translated as "an acquired reflex," as opposed to the "congenital reflexes," which require no teaching, and include laughing, weeping, &c. He inclines to the "bow wow" theory of language. He then enters into a philosophical disquisition on the origin of intelligent speech, and in regard to its being the agent of intelligent cognition, and the relative interdependence of conceptions and words. He agrees that deaf mutes without instruction hardly rise above the level of animals as regards reason and feeling, and adduces the well-known example of Laura Bridgeman that speech, or some equivalent, in some form is indispensable for intelligent cognition. He thus describes the speech apparatus—"For the purposes of speech there exists an apparatus as vast as it is complicated, consisting of nervous tracts and ganglionic centres, which partly occupy the position of the loftiest workshops of the conscious intelligence and the will, and are partly reflex agencies in which simple and ordered sensory stimuli are converted into motion. Such a thing as a simple '*centre of language*,' or '*seat of speech*,' does not exist in the brain, any more than a '*seat of the soul*' is a simple centre." He entirely agrees with Laycock in his most original article in this Journal (July, 1875) as to the principle of memory, and its organic and ancestral laws, distinguishing between ancestral, sensory, cerebral, and intellectual memory. We do not think he dwells sufficiently on the process by which reminiscences of all kinds are *fixed*, viz., the faculty of attention, which is certainly a motor act. He gives an account of the mode in which articulate speech begins and becomes perfected in a child, which is far from being as good, because not so true to nature, as the careful studies of C. Darwin* and M. Taine; and he shows that, though hearing cannot be said to be the only primary reflex source of speech sounds, yet it is their indispensable regulator, but that the full development of the intelligence and the

* See "Mind" for April and July, 1877.

acquirement of a language involving ideas, are always dependant also on the sense of touch and the muscular sense. He inclines to the view that acoustic sound reflexes are not simple reflex acts, but must take place through the cerebrum. He calls the reflex centres of non-articulate cries the "basalphonic centres," and places them below the corpora quadrigemina, their lower limit in the cord coinciding with that of the respiratory centre. He shows that the integrity of literal phonation is bound up with the integrity of the motor nuclei in the medulla oblongata; while the formation of syllables and words takes place in the cortical substance itself. He enters into a most elaborate analysis of the evidence as to the channels through which the speech impulses pass upwards from the lower phonic centre to the cortex cerebri, and concludes that we know "scarcely anything" about the "exact course of the motor fibres" in the intermediate region. In regard to the corpora striata he can only conclude that they are the "uppermost limit" of that region within which destruction of the cerebral tissue causes only slow stammering, or abolished speech from destruction of the mere "mechanism" of "literal phonation," and that we have no certain knowledge of the place whence the motor fibres subservient to speech enter the cortical convolutions, though we know that lesions of the white substance alone near the third frontal convolution may "disturb the power of forming words." "The great task of the future to unravel the tangled paths of feeling, thought, will, and action, makes us feel giddy with our present inadequate power of insight." This is emphatically our own state of mind in regard to Kussmaul's meaning, when he digresses (p. 694) into metaphysical speculation, and attempts apparently to set up—not unconscious thought, or cerebration, or action of any kind, but an unconscious consciousness—a consciousness not "personal" or within the "field of vision of the ego." The next chapter on localisation of formation in the cortex cerebri is careful, but in no respects original. He marshals the evidence as to the special connection of the third left frontal convolution and the neighbouring region of the brain with the function of speech, and decides that undoubtedly there is a special but not exclusive connection. He thinks that there is in the cortex a rather extensive though limited speech tract, in which tract the third frontal convolution has a special importance. He divides cortical

derangements of speech into two kinds, viz., dysphasic and dyslogic, and he tries to distinguish in a more scientific and accurate way than has yet been done the different speech symptoms that have been comprised under the term aphasia. He objects to the terms ataxic and amnesic aphasia as not expressing accurately the meaning attached to them. He concludes that the centres for spoken and written words are distinct. The next part of the article is so full of speech subtleties, so illustrated by cases and references to literature, that in the short space at our disposal we could not possibly do justice to it. Everyone who in future wishes to know all that was known about the physiology or pathology of speech in 1878 will refer to Kussmaul's work.

Die Geistesstörungen der Schwangeren. Wöchnerinnen und Säugenden. A Monograph, by Dr. RIPPING, Superintendent of the Rhenish Provincial Asylum in Siegburg. Stuttgart, 1877.

After an historical review of the literature of his subject, Dr. Ripping proceeds to give us the results of his experience of 168 cases of psychoses of pregnancy, childbed and lactation, extending over a period of four years.

He finds that the proportion of these cases to the sum of female mental disorders varies from 7 (Rush) to 21·6 per cent. (Ripping). This wide difference he accounts for on two grounds—(1) Fifty years ago, when Rush drew up his statistics, women were much less frequently treated in an asylum than now, and (2) the low average constitution of the women in the district of his (Ripping's) asylum—especially in the Düsseldorf district, which is so devoted to manufacture and coal-mining.

In his second section he asserts, in opposition to J. Thompson Dickson ("Journ. Ment. Science," vi., 380), that heredity does not play a greater part in the forms of disease under discussion than in other forms. To prove this he adduces a percentage of 41·6 of all females admitted to Siegburg Asylum, in which heredity could be traced, and comparing this with his puerperal cases, finds the influence of heredity in 71 cases out of his 168—*i.e.* in 44·2 per cent., only giving a balance of 2·6 in favour of Dickson's view. Besides this he points out the fact of the regular recurrence of mental disorders at the puerperal period. The influence of preg-

nancy the author traces to alterations in the circulation, and the blood (much weaker in solid constituents, according to *Nasse*), causing anæmia, and as an argument in favour of this view, he states that one quarter of his cases were primiparæ. He likewise attributes the psychoses coming on after childbirth in part to circulatory disturbances, but chiefly to defective nutrition. He quotes *Gassner* and *Kleinwächter*, to show that, after delivery, the weight of a woman, independent of the child's weight, decreases by one-fifth. And, further, he gives eight cases, in which recovery from mental disorders went hand in hand with the regaining of their former weight, thus, one who gained 32lbs. recovered in ten months, another, who gained 56lbs., recovered in eleven months. The causes at work during pregnancy and childbirth are still further aggravated during lactation. Thus, the author concludes that Oligæmia is at the root of all puerperal psychoses, and states that it was plainly marked in 155 of his cases.

Dr. Ripping then passes on to the forms assumed by the diseases of which he treats, denying anything specific in the nature of these psychoses, apart from other mental derangements. Besides 74 cases (44 per cent.) of pure melancholia, and 52 (32 per cent.) of pure mania, he, however, recognises definite combinations, and classifies these in four groups. The first group is MELANCHOLIA succeeded by MANIA, to which belong 12 of his cases. He gives three cases in full, in one of which the melancholic stage lasted $4\frac{1}{2}$, in the second, 15 months, and in the third only ten days. The first two certainly cannot be regarded as the usual stage of depression, which precedes almost every form of mental trouble. In all three cases the mania lasted more than 7 months. Of the 12 four recovered, four were incurable, two died, and two were still under treatment.

The second group consists of cases in which MELANCHOLIA is followed by MONOMANIA, and includes twenty of *Ripping's* cases. The monomania is, in nearly every case, one of persecution, generally of a definite character—and starting from dislike and suspicion of certain individuals, and connected with ideas of grandeur (*Ueberschätzungsideen*). Of these 20, none recovered.

MANIA succeeded by MONOMANIA forms the third group, which includes four cases. The monomania is of the same character as that of the second group, but the prognosis, if one may be founded on so few cases, is better, as three of the cases recovered, and the fourth improved.

The representatives of the fourth class—**MANIA** followed by **MELANCHOLIA**—are much fewer than the reverse first group, numbering only four. But the course is quite as defined. The prognosis is good, three recovering and the fourth improving.

Heredity does not, according to our author, favour any special form, but as regards age, he finds melancholia prevailing between 30 and 35, whilst mania was common in younger subjects.

The Prognosis of the puerperal psychoses *Ripping* considers much less favourable than the general estimate given. According to his statistics the percentage of recoveries is 42·8, being only five per cent. better than the average of female recoveries in his asylum. His figures are 42·8 per cent. recovered, 10·1 improved, 35·7 uncured, 5·3 died, 5·9 remaining under treatment. But the character of the disorder is very important, as 62 per cent. of those suffering from mania recovered, and only 33·6 of those suffering from melancholia.

Ripping's statistics on the beneficial effect of early admission to an asylum strongly confirm *Tuke's* experience. He found, namely, that of those cases which were admitted in the first month of the disease, 63·5 per cent. recovered, and that this percentage of recoveries gradually decreased with the increase of interval between outbreak and admission, till it reached 3·5 per cent. in those not admitted till the seventh month.

We have given the prognosis of the mixed forms under their several heads.

The average duration of the curable cases was 9·2 months, 7·9 for mania, and 10·7 for melancholia.

As regards pathological anatomy, nothing very definite was found. In melancholic cases, the brain was, as usual, very anæmic, and Henle's subarachnoid space was filled with a clear, watery fluid, while, in maniacal cases, the vessels were injected, and the pia firmly adherent. In one case of delirium acutum the dura was firmly adherent, and the gyri glued together. In seven of the nine fatal cases, there was tuberculosis pulmonum.

In discussing treatment, chief stress is laid on a nourishing diet. The use of narcotics, recommended formerly, he finds very bad, except in cases of great violence, but thinks that a warm bath for twenty minutes, and a tumbler of good claret are generally sufficient to induce sleep. He places considerable reliance on tonics. In cases of nocturnal restlessness

occurring in maniacal patients, and accompanied with transient congestive attacks, he recommends tinct. digitalis mm. 15, after half-an-hour's warmish bath, and cold applied to the head. For melancholic cases, packing in the wet sheet is commended.

In the second division of his book, the author discusses the psychoses of the three periods separately. In opposition to Tuke, he finds that the greater number of the psychoses of Pregnancy occur in the last four months, 21 out of 32 of his cases occurring during this period, and most of the eleven others being very curiously complicated cases. Under the head of the ætiology of this class, he remarks upon the fact that 13 per cent. were unmarried. Of the 32 pregnant cases, 84.4 per cent. were melancholic, and 15.6 maniacal. In 15 cases heredity was traced, and here we are struck by finding that 14 out of these 15 were melancholic, and only one maniacal. In cases of relapse, the same form generally recurred. The prognosis in pregnancy is worse than at any other stage—34.4 per cent. cured, 6.2 improved, 37.5, uncured, 12.5 died, and 9.4 under treatment. Youth makes the prognosis more favourable, and likewise the occurrence of the psychosis in the latter months of pregnancy.

The psychoses special to childbed occur, according to Rippling's statistics, 42 per cent. in the first week (27 per cent. between the fourth and seventh days), 22 in the second week, and the remaining evenly divided between the four succeeding weeks. Mental disorder is most frequent after the first confinement—30 per cent. In 12 out of 82 cases, the death of the child immediately preceded the outbreak of the disorder. Melancholia numbered 44 to 36 of mania. The prognosis is better for strict puerperal cases than for either of the other two—pregnancy or lactational. Of 82 cases 39 recovered, 9 improved, 25 remained uncured, 4 died, and 6 were still under treatment. Many of the melancholic cases were strongly marked by stupor, though this was often accompanied by a non-sexual irritation of the mucous membrane of the genitalia. The maniacal form generally begins with a rise of temperature.

In the third division, lactational insanity, we find inflammation and abnormal position of the uterus playing an important ætiological part: 68 per cent. of the cases (47 in number), were melancholic. The prognosis stands midway between that of pregnancy and childbed—42.5 recovering, 10.6 improving, and 42.5 being incurable.

The monograph concludes with 15 pages of carefully arranged tables.

From the above *résumé* it will be seen that the author has had a large material to work on, and has analysed it carefully and impartially. His work will be a solid addition to our statistical knowledge of the subject.

EDWARD G. GEOGHEGAN.

PART III.—PSYCHOLOGICAL RETROSPECT.

1. *American Psychological Literature.*

By D. HACK TUKE, M.D., F.R.C.P.

American Journal of Insanity. Vol. xxxiii.

January, 1877. No. 3. *Pathological Researches*, by Dr. John P. Gray. *Case of Mrs. Jane C. Norton*, by Dr. Ordronaux. *Reviews, &c.*

April, 1877. No. 4. *General Paralysis*, by Dr. A. E. Macdonald. *The Curability of Insanity*, by Dr. Pliny Earle. *Reviews, &c.*

July, 1877. No. 1. Vol. xxxiv.

Oct., 1877. No. 2. *The Functions of the Great Sympathetic Nervous System*, by Dr. Bucke. *Proceedings of the Association of Medical Superintendents.* *Reviews, &c.*

Pathological Researches, Dr. Gray.—This article consists of an instructive *résumé* of the main facts of cerebral histology, grouped, for the most part, under “infiltration” and “involution”—the products of the former being normal, but in excess, and only like dirt, “matter in the wrong place,” those of the latter being a degeneration or metamorphosis of the tissue, commencing in the nucleus of the cell, thus developing a cell of a wholly different type, and capable of proliferation. The conditions of infiltration, fat, calcification, pigment, and amyloid bodies, marking chronic and progressive stages of insanity, those of involution being found more frequently, with the exception of colloid degeneration, in acute insanity. Dr. Gray rapidly traces what he conceives to be the order of phenomena in the pathology of insanity, commencing with hyperæmia and consequent anæmia, including dyscrasia. “Saturation” of the tissues follows, involving aneurismal dilatations, dissecting aneurisms, inflammatory action and softening, and of course diminished nerve force, embarrassed cerebral action—the conditions, in fact, of the genesis of insanity. When the circulation is arrested and stasis is caused, the processes of involution are set up, and the vessel, with its contents, is transferred into fat granules.

Hence, also, degeneration of the cells and neuroglia. Dr. Gray illustrated his paper (when read) by a number of photo-micrographs.

The only other article of importance is the report on the case of Mrs. Norton, by Dr. Ordronaux. It is too long to admit of satisfactory condensation.

General Paresis.—Dr. Macdonald, in this paper, which contains a careful description of the disease, based on a large number of cases, notes the curious fact that it was recognised in England 35 years before it was recognised in America. During the last three years, the percentage of cases of general paralysis to other mental disorders has been in America, 4·1 for men and ·4 for women, while in England it was, during the same period, 14·3 for males and 2 per cent. for females. The number of cases admitted into Dr. Macdonald's own asylum (New York City) during the last three years, was 34, 55 and 72 respectively. This apparent increase is partly attributed to greater accuracy of diagnosis, an explanation which one would hardly have looked for, but which is confirmed, to a certain extent, by the fact that fifteen cases have returned to the asylum who had been discharged as labouring under other forms of insanity. But after allowing for increased facility in detecting the disease, Dr. M. believes that general paralysis is "steadily and rapidly extending." Entering fully into the causation of the disease, he finds it to be more frequently due to heredity than is usually admitted to be the case. The belief in alcoholic intemperance being the chief exciting cause, is "strongly sustained"—116 out of 155 paralytics being habitual drunkards. Sexual excess was nearly as frequent a cause, but the difficulty of distinguishing an early morbid symptom of the disease from a cause, is here an extremely, and, we would add, a peculiarly, great source of fallacy. Syphilis was recognised in 45 cases out of the above number. In 83 cases, sun-stroke and injuries to the head were the causes in "a considerable number" of instances. The relative frequency of the disease in men and women (12·6 p.c. males, ·5 females) is referred to the difference in temperate and profligate habits. This view is confirmed by the greater frequency of general paralysis among women in districts and in classes where they are more addicted to drink. As to age on attack, Dr. Macdonald's figures show that the opinion that the disease is never seen after 60 is a mistake. He has never seen a case of recovery. He has not known a case living beyond the sixth year. We have known several. Dr. Macdonald confirms the observation of Dr. Clouston, that phthisis colours the symptoms in general paralysis—a decided melancholy element tempering the extravagance of the delusions, amounting, at times, to actual depression. With respect to temperature, the only fact clearly made out was, that it rose before an attack of maniacal excitement and convulsion and fell directly afterwards. There was an average difference of 1° Fahr. in the case of excitement, and of 1½° in that of a convulsive seizure. Athetosis is reported to have existed in a considerable number of

cases; the toes being more frequently affected than the fingers. Of the various post-mortem changes found in general paralysis, Dr. Macdonald concludes that not one of them has proved to be a primary morbid affection peculiar to this form of insanity. "In fact, they all represent only different stages of atrophy and necrosis of the tissues; in other words, they are the result of a diffuse but slowly-progressing atrophy and necrosis. By their *diffuse* character, the lesions observed are distinguishable from those of other chronic forms of insanity. From all acute cases they differ anatomically in their products."

The Curability of Insanity. By Dr. Earle.—This article has attracted, as it deserved to do, a large amount of attention. It is calculated to dispel at least one fallacy which has crept into the statistics of insanity. With few exceptions, recoveries have been calculated upon the total number of admissions, including, therefore, re-admissions. The result thus obtained is not to be despised; it tells us how many *times* the treatment pursued has been followed by recovery; but it does not tell us how many patients have been restored to society cured, the point of most importance to ascertain. And the mischief is that by professing, or appearing to give what they do not, these statistics, unless explained and accompanied by a calculation of persons who recovered upon single admissions, lead to the belief that insanity is much more curable than it really is. We might enter at great length into the questions raised by this paper, but we must content ourselves with commending it, in its re-published form, to the attention of all who engage in the preparation of lunacy statistics.

The Functions of the Great Sympathetic System. By Dr. Bucke.—This is a very interesting and able defence of the opinion entertained by not a few physiologists at different times, that the sympathetic system is the seat of the emotional or moral nature. Gall, in his day, combatted it. A French medical psychologist, long after Gall, defended the theory. We are glad to see all that can be said in its favour brought forward in the ingenious, suggestive, and thoughtful way in which it has been done by Dr. Bucke. It has always appeared to us extraordinary that so comparatively little pains have been taken by mental physiologists to endeavour to explain scientifically the everyday facts which show the intimate relation which does exist between the emotions and the sympathetic system. That this special connection or *rapport*, which exists between them, does not obtain between the intellect and this system, we do not doubt, but it is another thing to hold that the emotions have their seat in the sympathetic system, and not in the encephalon. The facts which the writer brings forward are proofs of this connection, but the question is, whether they cannot all be explained by distinct centres *in the encephalon*, not only for intellectual operations, but for the emotions. We believe the medulla oblongata stands in a special relation to the emotions, without concluding that they are located there. If such is the case, the influence exerted upon the vaso-motor nerves may be explained by their

principal centre being in the medulla—a fact to which we see no allusion in this article. We think that Dr. Bucke is in danger of confounding a mental feeling—*e.g.*, joy or love—with the effect produced thereby upon the bodily system, through, doubtless, the medium of the sympathetic.

The view which locates intellectual and emotional centres in the same portion of the brain, wholly fails to explain a host of psychological phenomena, as also innumerable physical phenomena accompanying or following them. On the other hand, one must admit that to exclude the emotions altogether from the encephalic functions, and relegate them to the sympathetic system, does not help us to explain the wide difference between moral and intellectual capacity in the same person any better than, for instance, the doctrine of Todd, that the emotions have the mesocephale for their centre, or the doctrine of Gall, that they are located in certain well-defined portions of the cerebral convolutions. We cannot at all agree with Dr. Bucke's statement that injuries to, or diseases of the brain, exert little or no influence upon the moral nature. Certainly cerebral hæmorrhage will distinctly affect it, both with and without disordering the intellect. So will blows on the head.

What he says, again, about the influence of bodily conditions, as dyspepsia, affecting the emotions, causing mental depression, &c., is, of course, most true, but this would be equally well accounted for by the action of the peripheric extremity of the sympathetic nerves upon an encephalic centre or organ, invested with emotional functions.

We find it impossible to do justice to this article in an abstract like the present. If we have criticised the author's main position, it is not because we do not acknowledge with him the distinction between the centres of intellectual and emotional operations, or recognise the intimate relation between the latter and the ganglionic system. This we have strongly put forward elsewhere.* We look, however, to future researches demonstrating that, as Ferrier's experiments point to intellectual as well as motor functions being centred in one portion of the brain, and emotional as well as sensory functions in another, an anatomical connection exists between the latter duality and the sympathetic centres and their nerves; thus influencing in the extraordinary manner in which they do the viscera and vessels.

Proceedings of the Association of Medical Superintendents. 1877. —Much interesting information is given in regard to the numbers and condition of the insane in different States, and also respecting the provision for criminal lunatics. In Massachusetts, if a convict appears to be insane, two superintendents and the prison physician form a commission to determine whether he is so, and whether he shall go to an asylum. If he recovers before the expiration of the sentence, he is sent back to prison. Provision has been made for 30 insane crimi-

* "Illustrations of the Influence of the Mind upon the Body," 1872.

nals in the State Prison, entirely separate from the convicts. In the State of New York there are at Auburn 100 patients. Dr. Macdonald, the superintendent, holds that the criminal insane should be provided for in separate institutions. He has found at Auburn, where there are both convicted and unconvicted patients, that the former exercise an injurious influence upon the latter ; and he believes that an hospital for the *convict* insane must, of necessity, partake of the character of a prison in its custodial capacity, Dr. Macdonald, speaking of those who have committed murder and recovered their sanity, observes that " the responsibility involved in their liberation is very grave, and one that courts are loath to assume, especially in view of the strong probability that, if let out, they would return to their former habits and associations, and experience a return of the malady, that would render their condition as bad, or even worse, than it was before."

Dr. Nichols, the President, gives his views on criminal lunatics at length, and insists strongly on the necessity of providing for the unconvicted insane elsewhere than with insane convicts. To have them in the same institution is "utterly repugnant to our ideas of propriety." There should be separate wards for them, generally a separate building, as a department of each State and Borough Asylum. Such a plan would be less expensive than treating them entirely separate from the ordinary insane. He maintains that the States of New York and Pennsylvania, and, perhaps, some others that have two or more large penitentiaries, should provide a separate institution, to which all their insane criminals should be sent. For the cases that arise in the penitentiaries in the smaller States he would establish an insane department of the prison hospital, under the charge of the prison physician. The view thus enunciated by the President differs in some respects from the resolutions passed by the American Association in 1873, on the criminal insane. This arises from his fuller recognition of the various kinds of criminal lunatics. Dr. Nichol classifies them in essentially the same way as is done at Broadmoor.

A considerable portion of the debates is occupied with " the burning question " of non-restraint. If some hard blows are levelled at the English system, they assuredly are not harder than those aimed by ourselves at the amount of restraint practised in American asylums. We have no wish to be dogmatists. So long as the leading supporters of non-restraint admit there are possible cases in which mechanical restraint is permissible, the question may be said to be one of degree and not of principle. At the same time the practice may differ so greatly as to form two divergent schools. As in the use of alcohol, there are the teetotaller and the moderate drinker, the former of whom makes an exception in favour of its use "for medicinal purposes," so, it should not be forgotten, the English non-restrainer, unless a very rabid disciple, allows of certain exceptions in determining not to use mechanical restraints. In any great movement of a humane character, excesses are sure to occur, and we do not claim for the

supporters of the non-restraint system an entire immunity from errors of judgment in language or practice. All that is believed is, that if, of two superintendents, one resolutely sets himself against the strait-waistcoat, &c., making that the rare *exception* which the other makes his *practice*, and even a valued resource and aid to treatment, the results, in the long run, will be much more satisfactory in the former than in the latter case. But it would ill-become the first "to lecture" the second, if he acted from equally humane and scientific motives, which might well be the fact. An unseemly display of personal abuse arising out of the discussion of this subject, is revealed in the American medical press. If "restraint" is ever a good thing, it might with advantage be applied to verbal as well as muscular excitement. Some of the above remarks will be responded to by one (at least) of the American superintendents, for Dr. Gundry (Ohio), expresses in the debate "a great deal of regret at hearing the paper read by Dr. Grissom in defence of restraint," and says, "I do not mean to say I will not use it; but I do say that restraint is the exception in the treatment of patients. I therefore very much regret the appearance of a paper like this, which defends it on such broad grounds as would seem to place it where it may be called the corner-stone of our specialty." Again, "I do object to any going away with the feeling that restraint is the corner-stone of treatment, and forthwith go home, not to see how much they can lessen it, but to use it more than before. This is what I protest against." We regret that, in this discussion, manual restraint is always spoken of as the substitute for the waistcoat. If the dispute were merely between these two, we should agree that in some, if not many instances, the former would be more irritating than the latter. The answer we should give is really unconsciously supplied for us by Dr. Nichols, when, in his speech, he says, after remarking that mechanical restraint is much less used than formerly—"We have all been striving to improve our methods of treatment, until more attendants are allowed, and better facilities for exercise and diversion are provided in most institutions than formerly was the case, and we have the aid of more and better therapeutic agents than we formerly had, all of which enable us to dispense with restraint, without sacrificing the welfare of the patient, more frequently than we formerly could." When he adds, "*It wounds my sense of human dignity to see any patient under mechanical restraint*," we cannot feel that there is any great or vital difference of view between the President of the Association of American Superintendents and ourselves.

(To be continued.)

PART IV.—NOTES AND NEWS.

REPORT OF THE THIRTY-THIRD ANNUAL GENERAL MEETING OF THE MEDICO-PSYCHOLOGICAL ASSOCIATION.

The thirty-third Annual General Meeting of the Medico-Psychological Association was held on Friday, July 26, in the Library of the Royal College of Physicians, Pall Mall, under the presidency of Dr. J. Crichton Browne. After the meeting of the Council, the general meeting assembled at eleven o'clock. The following members and visitors were present:—Drs. Aldridge, Blandford, Crichton Browne, Bucknill, Bailey, Brushfield, Boyd, Bayley, Beach, Clouston, Courtenay, Clapham, J. A. Campbell, Chapman, Daniel, Deas, Eagar, Fox, Finch, Guy, Hewson, Hingston, Haggard, Hall, Jepson, Murray Lindsay, Maudsley, Manley, Mould, T. W. McDowall, J. G. McDowall, McCullough, Mickle, Manning, Major, Manns, Mickley, Munro, D. Mackintosh, A. Mackintosh, Newington, Nicolson, Orange, Parsey, Paul, Pedler, Rogers, Rayner, Robertson, Savage, Spence, Sutherland, Swaine, Stewart, Hack Tuke, Harrington Tuke, Thompson, Urquhart, Willis, Wood, Walford, Ward, Williams, S. Wilks, Wade, and Yellowlees.

Dr. BLANDFORD, the retiring President, in resigning the chair to Dr. Crichton Browne, made some remarks upon the incidents of the past twelve-month. It had threatened, he said, to be an eventful year, but the threat had not been fulfilled. A twelvemonth ago they were awaiting the Report of a Select Committee of the House of Commons which had been collecting evidence with regard to the operation of the Lunacy Laws. The Report of that Committee had appeared, but no legislation upon it had yet been attempted. There had, however, been a Bill introduced into the House of Commons which would have affected the interests of many members of the Association. A special meeting was called to consider it; but that Bill was not passed, and he trusted that if any legislation upon the subject should take place next year, their interests would be fairly considered (hear, hear). As President last year, he undertook to compile an Index to the Journal of the Association. It had required more time than he was able, with many interruptions, to give to it, but it was advancing towards completion, and he hoped to place it in their hands next year.

Dr. CRICHTON BROWNE then took his seat as President with applause. He said he had received a letter from the Association Secretary, Dr. Rhys Williams, who could not be present at this meeting, as the office to which he had been lately appointed did not allow him to remain an active member of the Association. Dr. Savage would act as Secretary in his stead till the Association should have elected a Secretary.

Dr. Savage presented the minutes of the last annual meeting, which were published in the October Number of this Journal.

Dr. HARRINGTON TUKE objected to the confirmation of the minutes, because the report of the last annual meeting, as published in the Journal, had entirely altered the resolution which he proposed on that occasion, and which Dr. Murray Lindsay seconded, relating to the election of the Editors of the Journal. He asked to have the original minutes read from the Secretary's papers. (After some conversation, Dr. Savage referred to the papers which had been hastily placed in his hands by Dr. Williams, and found that, by some mistake, they did not comprise the original minutes of the meeting referred to.) Dr. Harrington Tuke went on to say, that the error in the report against which he protested, might have originated with the shorthand writer. He would now explain what it was against which he protested in that report. At the last annual meeting, without having had any concert with any person, or any previous intention of doing so, he thought it his duty, in the interest of the Association, to object to the re-appointment of the former Editor of the Journal, Dr.

Maudsley. He did so in as temperate a manner as he could, and the resolution which he proposed was, that instead of Dr. Maudsley, the joint editors should be Dr. Bucknill, Dr. Hack Tuke, and Dr. Clouston. But he found that in the report printed in the Journal he was made to object, in general, to the editorship as then carried on jointly by Dr. Maudsley and Dr. Clouston. That was not at all his meaning, or the meaning of Dr. Murray Lindsay, who seconded his resolution; they only objected to the appointment of Dr. Maudsley. It was of vital importance that whatever was proposed, and whatever opinions were expressed by members of the Association at these meetings, should be correctly represented.

Dr. Tuke was asked by the President if he had put his resolution in writing, and he said he had not done so.

Dr. CLOUSTON said the report was printed as given in by the shorthand reporter.

Dr. BUCKNILL—Mr. President: I desire, with your permission, to make a personal explanation. I have learned that many members of this Association have been misinformed of the circumstances under which my name was put forward last year in connection with the question of editing the Journal, and I owe it to myself, no less than to the Association, to make these circumstances clear. On the 3rd of July last year, I got a letter from Dr. Clouston, joint Editor of the Journal, in which he expressed a particular wish to see me before the meeting of this Association, "as to the editorship of the Journal, which" [he wrote] "I am sorry to say Maudsley proposes to resign. I want your advice badly. I feel it is a question of some importance to our department of medicine and our Association, and want your views on the matter." From this information, and actuated by feelings of regard to this Association, and interest in its Journal, I wrote to Dr. Clouston, explaining my own willingness to occupy the vacancy, and I received a reply from him, dated July 28th, in which he says, "I got a letter from Maudsley yesterday, suggesting Hack Tuke's name, and that, with your letter this morning, has quite taken me by surprise. * * * My position with regard to the editorship is this—I greatly regretted Maudsley's retirement, and urged him to re-consider his decision, thinking there was no prospect of any man of equal name being found in or near London to take the position. When he announced his final decision, I thought my duty was quite clear. I did not wish either the work or the responsibility of the sole editorship, and I knew that an English, if not a London editor, was almost a *sine quâ non*. * * * The real difficulty, it seemed to me, was to get a good London man to take Maudsley's place." I also received similar information from Dr. Rhys Williams, the Honorary Secretary, and from other members, whom it is not needful to name, as their position was not official, and I was entreated to allow myself to be proposed for my old office, no one doubting that it was vacant. I therefore, wrote formally, to the Honorary Secretary, expressing my willingness to accept the office, and I wrote to the President, Dr. Parsey, who had also been informed of the vacancy, and who kindly promised to propose me."—On the very day of the meeting of the Association, I had a conversation with Dr. Clouston as to his claim to be senior to me, should we be appointed joint editors; and, after the Council Meeting, I was entirely taken by surprise by the President informing me that there was no vacancy. I at once agreed with Dr. Parsey that he should not carry out his promise of proposing me, thereby doing the only thing which I could fairly be expected to do. I could not doubt that I had been misinformed and misled, therefore I took no part in the embarrassing discussion which ensued, thinking that, if explanations were needed, they were due from others, and not from me. I have only further to add my deep sense of thankfulness and relief that the association left me free. *

* NOTE.—Supplementally to Dr. Bucknill's "explanation" and the above unauthorized quotations from my private letters to him, the Report of the Annual Meeting of last year may be referred to (see No. for Oct., 1877, Vol. xxiii., pp. 428-33.) Dr. Maudsley has there given an account (p. 429) of his intention to have resigned, and of his reasons for not doing so at the time. He scarcely, however, conveys an adequate idea of the almost universal wish expressed that he should not resign, or of the earnest appeals that were made to him by some of the oldest and most influential members of the Association, appeals which only at the very last moment had the effect of altering his resolution.—T. S. CLOUSTON.

Dr. HARRINGTON TUKE said he did not consider it a personal matter at all, and only wished to correct the mistake in the printed report. He was perfectly satisfied with having been allowed to do so.

The PRESIDENT said it should be considered to have been an error on the part of the reporter. The first business now before them was to appoint the place of meeting for next year.

Dr. JAMES STEWART thought it unfortunate that the annual meeting should be held in London three times running. It tended to prevent many gentlemen in the country from joining the Association. He would propose that their next meeting should be at Bristol.

This was not seconded, and it was resolved, on the motion of Dr. PAUL, seconded by Dr. YELLOWLEES, that the meeting should be held in London.

The next business was the election of a President of the Association for the ensuing year.

Dr. PARSEY said he was pleased that the annual meeting was to be in London, because this enabled the Association to have the services of a gentleman, as President, whom he would now propose, Dr. Lush, M.P. for Salisbury, who was well known as one of their oldest members, and who had always taken a sincere interest in the Association. As there was a probability of some legislation upon the subject of lunacy, which seemed to have been deferred from this year to next year, it would be important to have some one in the House of Commons who was associated with them; but Dr. Lush had also a claim upon them, from his eminent position amongst them, and his appointment would add weight to the office of President.

Dr. MANLEY seconded the resolution for the election of Dr. Lush, M.P., as President, which was carried unanimously.

The following letter was afterwards received from Dr. Lush:—

High Cliff,
Lyme Regis,
July 31, 1878.

DEAR DR. SAVAGE,

I feel greatly honoured at having been selected as President of the Medico-Psychological Association for the coming year.

Never having taken an active part in the business, the unlooked for compliment is all the greater, and I trust it may be in my power to aid the interests of the Association in the future.

Yours very faithfully,

J. A. LUSH.

Dr. Savage.

The election of an Association Secretary, in place of Dr. W. Rhys Williams was the next business. A letter from him to Dr. Savage, stating that his recent official appointment prevented him from continuing to be Secretary, was read by the President.

Dr. HACK TUKE proposed that Dr. Rayner, of Hanwell, should be elected, as a gentleman living in the neighbourhood of London, who would, he felt quite sure, perform the duties of Secretary well. He must, however, express his regret at losing the services of Dr. Williams, as Secretary and as an active member of the Association.

The resolution to elect Dr. Rayner secretary was seconded by Dr. ORANGE and carried unanimously.

The following letter from Dr. Maudsley, resigning his editorship of this Journal, was then read by Dr. Savage:—

9, Hanover Square, London, W.
July 25th, 1878.

DEAR DR. SAVAGE,—As you have been good enough to undertake the work of General Secretary until the Annual Meeting of the Medico-Psychological Association, I must beg you to place before the Members on that occasion my resignation of the Editorship of the "Journal of Mental Science," which, by their favour, I have now held for fifteen years.

I am grateful for the confidence which they have given me for so many years, and shall always be glad to reflect that the progress of the Journal during that period has been one of steadily increasing prosperity. I heartily hope that it may have a yet more prosperous career in the future.

Believe me, dear Dr. Savage, yours faithfully,

H. MAUDSLEY.

Dr. Savage.

The PRESIDENT observed that this was a letter which the Association must receive with considerable regret. There could be no question of the value of the distinguished services that Dr. Maudsley had rendered to this Journal. It was needful that some arrangement should now be made.

Dr. PAUL, as one of the oldest members, and one who had for many years been associated with Dr. Maudsley, would propose a vote of thanks to him on his retirement from the editorship. He knew that the Journal was losing a very able and distinguished editor, whose literary abilities had shed a great lustre upon the Association, for he was a man of world-wide reputation. Personally, too, he felt much regret at the retirement of Dr. Maudsley, from whom he had always received kind consideration.

Dr. HARRINGTON TUKE begged to be allowed to second the vote of thanks to Dr. Maudsley, heartily agreeing with all that had been said of his talents, ability, and energy, shown in the editorship of their Journal, however he might differ with him upon some points of doctrine.

The vote of thanks was passed by acclamation, and was communicated to Dr. Maudsley by the President

Dr. MAUDSLEY briefly expressed his cordial appreciation of this vote, and the high gratification which he felt at having been honoured with their confidence during the past fifteen years. Nothing in his professional life could afford him more grateful remembrances than the friendships he had formed in that long period, and the kindness he had experienced from members of the Association. He might now perhaps be allowed to propose the names of three gentlemen, whom he trusted the Association would appoint to the joint editorship. They were Dr. Clouston, Dr. Hack Tuke, and Dr. Savage. The first-named gentleman had worked in the editorship so efficiently that during the past year his (Dr. Maudsley's) own editorship had been almost nominal. This might be an argument for a single editor; but Dr. Clouston desired to have other gentlemen associated with him. Dr. Hack Tuke had the needful leisure and the literary skill; and Dr. Savage was a man of increasing scientific reputation, while he had, in Bethlem Hospital, materials at his disposal for recording a large number of clinical observations. These would form a very strong team for the editorship of the Journal; and he was now induced to change the opinion which he had expressed at the last meeting, that it was better to have a single editor; for he knew that his friend Dr. Clouston was actively employed elsewhere, and he thought the head-quarters of the Journal ought to be in London, and not in Scotland.

Dr. RAYNER seconded the motion for the appointment of the three gentlemen above named to be Editors of the Journal.

Dr. HARRINGTON TUKE moved, as an amendment, that Dr. Savage be requested to take the entire editorship. His reasons were those which Dr. Maudsley had advanced last year—that it would be better to have the Journal in the hands of a sole editor. Dr. Clouston, living at a distance, and not being so well able to ascertain the views and feelings of the profession in England, could not be sole editor. Another remark he wished to make was this, that the editor of their Journal ought not to be allowed to make attacks on the position of any member of the Association. He considered that he had been aggrieved in this manner, and he should therefore wish the election to go to a ballot, so that the editor might be taught, if it were by only one vote against him, that he was not to do so with impunity.

The amendment of Dr. Harrington Tuke was not seconded.

Mr. G. THOMPSON proposed that the name of each gentleman proposed for an editor of the Journal should be submitted to the vote separately.

This was seconded by Dr. HARRINGTON TUKE, but was negatived by the meeting, scarcely any other members voting for it.

With regard to a ballot, the PRESIDENT said the rules of the Association prescribed that the election of a President should be by ballot, but not the election of editors.

The original resolution, that Dr. Clouston, Dr. Hack Tuke, and Dr. Savage be elected editors, was then passed.

The next business was the re-election of the Secretary for Scotland, Dr. Rutherford, and the Secretary for Ireland, Mr. Maziere Courtenay, both of whom were re-elected for the next year.

The election of a Treasurer for the next year was then proceeded with; Dr. Paul, who held that office last year, was requested to continue in it.

The PRESIDENT said there were now three members of the Council to be elected in place of three retiring, Dr. M'Kinstry, Mr. Garner, and Dr. Yellowlees, who were not eligible for re-appointment. Besides those three, Dr. Rayner had been elected Secretary, and Dr. Lush President, making two more vacancies in the Council, so that there were five places to be filled up.

On the motion of Dr. YELLOWLEES, the following were elected, without opposition, to be members of the Council:—Dr. Deas, Mr. Mould, Dr. Parsey, Dr. J. A. Campbell, and Dr. Ringrose Atkins.

A proposal, signed by six members, for the election of Dr. Rhys Williams, the late Secretary, to be an Honorary Member of the Association, was next brought forward.

Dr. HARRINGTON TUKE, speaking in support of it, hoped the President would convey to Dr. Rhys Williams their thanks for the ability and courtesy with which he had performed the duties of Secretary.

The proposition was unanimously agreed to. The President, in accordance with this resolution, wrote to Dr. Williams, and received the following reply:—

7, Cumberland Terrace, Regent's Park,
July 27th, 1878.

DEAR DR. RHYS WILLIAMS,—I have the gratification to announce to you that at the Annual Meeting of the Medico-Psychological Association, held yesterday at the Royal College of Physicians, you were unanimously elected an Honorary Member of that body. At the same time a special vote of thanks was awarded to you for the valuable services which you have rendered to the Association in the capacity of Honorary Secretary during a period of five years. In conveying to you this vote of thanks, I was to express to you the hope of the Association that you will be long spared to fulfil with usefulness and distinction the important duties of the high office to which the Lord Chancellor has called you.

Receive an assurance of my personal esteem, and believe me

Yours very faithfully,

Dr. Rhys Williams.

J. CRICHTON BROWNE.

19, Whitehall Place, S.W.,
30th July, 1878.

DEAR DR. CRICHTON BROWNE—Allow me to thank you very much for your letter, announcing the fact that the Members of the Medico-Psychological Association had done me the honour to elect me an Honorary Member. The pleasure I experience is much enhanced by the expressions you use in conveying the news to me, and I am gratified to obtain promotion at a time when you are the distinguished head of our order. The services I rendered as Secretary were "nil," but I think you have a good man now. With kind regards, believe me,

Yours very faithfully,

W. RHYS WILLIAMS.

The election of new ordinary members was then proceeded with to the number of 23—

Baker, Henry M, M.B., M.C., West Riding Asylum.

Baker, Benj. Russell, M.R.C.S., L.S.A., Assist. Med. Officer, Prestwich Asylum.

Bailey, H. Fred., M.R.C.S., L.S.A., Newport Pagnell.

Barton, James E., L.R.C.P., L.M., M.R.C.S., Senr. Assist. Med. Officer, Brookwood Asylum.

Clapham, Crochley Wm., L.R.C.P., M.R.C.S., West Riding Asylum.

Clunn, Thos. R. H., M.R.C.S., L.S.A., Assist. Med. Officer, Prestwich Asylum.

Craddock, Fred. H., B.A., M.R.C.S., L.S.A., St. Luke's, Old Street, E.C.

Croudace, James H., L.R.C.S., S.M., L.S.A., Assist. Med. Officer, Northumberland Asylum.

- Cooke, E. Marriott, M.B., M.R.C.S., Sen. Assist. Med. Officer, Powick, Worcester.
- Gill, Stanley A., L.R.C.P., M.R.C.S., M.R.C.P., Royal Asylum, Liverpool.
- Glendinning, James, M.D., L.R.C.S., L.M., Assist. Med. Officer, Aber-gavenny.
- Hosking, Ethelbert, M.R.C.S., L.S.A., Assist. Med. Officer, Surrey Asylum, Tooting.
- Huggard, Wm. R., B.A., M.D., M.C.L., Leytonstone, Essex.
- Johnstone, J. Carlyle, M.B., C.M., Assist. Med. Officer, Fife and Kinross Asylum, Cupar, Fife.
- Lush, John Hy., F.R.C.P., L.M., M.R.C.S., F.L.S., Fyfield, Andover, Hants.
- Moody, J. M., M.R.C.S., Jun. Assist. Med. Officer, Brookwood.
- Muirhead, Claud, M.D., F.R.C.P., 9, Heriot Row, Edinburgh.
- Murray, Henry G., L.R.Q.C.P., L.M., L.R.C.S., Assist. Med. Officer, Prestwich.
- Philipps, Sutherland Rees, M.D., C.M., F.R.G.S., Cheltenham.
- Pyle, Thos. T., J. P., M.D., Sunderland.
- Platt, —, M.B. (Address uncommunicated).
- Thurnam, Fran. W., M.B., C.M., 22, Cotham Row, Bristol.
- Urquhart, Alex. R., M.B., C.M., Ticehurst, Sussex.

Mr. JAMES STEWART asked if it were not possible for a new member to be elected in the interval between two annual meetings? It was not desirable that any gentleman who wished to become a member should be kept waiting for nine months or more. The Association now held quarterly meetings, and new members should be received then.

The PRESIDENT said it was clear, from the rules, that members could only be elected at the annual meeting, at which also a ballot could be taken.

The presentation of the Treasurer's accounts for the past year was the next business.

Dr. PAUL, after thanking the Association for re-appointing him Treasurer, produced the balance-sheet. (See next page).

The Treasurer's accounts were certified by the Auditors, Dr. Hack Tuke and Dr. Murray Lindsay. Their approval of them was confirmed by the meeting. The first-named of these two gentlemen could not be re-elected auditor, because he had been made an Editor of the Journal. Dr. Boyd was, therefore, elected an auditor in his stead, along with the other auditor re-elected for next year.

Dr. PAUL observed that there was a balance in hand, and he would propose that the Council be requested to consider how it could best be made available for the benefit of the Association, and for the advancement of psychological medicine. He had suggested, on a former occasion, that there should be a special Committee to consider this matter.

Dr. HARRINGTON TUKE seconded the proposition, and suggested that the Secretary should summon a meeting of the Council for the purpose.

Mr. STEWART hoped the matter would be ready to be discussed at the next quarterly meeting. He wished to see more business done at the quarterly meetings and that their meetings should be held regularly, as they were in Scotland.

The PRESIDENT said that only the annual meeting was provided for by the rules of this Association, but the Officers of the Association could summon quarterly meetings, and they would perhaps consider what had been said as expressing a wish of some members to have a quarterly meeting.

Dr. HACK TUKE, with reference to the application of a surplus fund, reminded the meeting that last year there was a Committee of four members, with the Secretary, Treasurer, and Auditor, to consider the matter. Dr. Bucknill, Dr. Rogers, Dr. Mayer, and Dr. Wood formed that Committee, and the proposal was that the money should be applied to establish a circulating library of books on psychological medicine; but he did not know that they had come to any resolution.

THE MEDICO-PSYCHOLOGICAL ASSOCIATION.



The Treasurer's Annual Balance Sheet, 1877-8.

RECEIPTS.		EXPENDITURE.	
	£ s. d.		£ s. d.
To Balance—Cash in Hand	... 397 14 10	By Annual and Special Meetings	... 18 10 0
To Subscriptions received	... 219 8 0	By Editorial Expenses	... 8 8 0
By Secretary for Ireland	... 34 13 0	Printing, publishing, engraving, advertising, and postage of Journal	... 266 7 7
By Secretary for Scotland	... 45 3 0		
By Sale of Journal, Messrs. Churchill	... 98 16 0	Sundries and Advertisements—	
		By Printing and expenses of circular for Meetings	2 6 6
		By Treasurer	10 10 0
		By Secretary for Ireland	0 6 2
		By Secretary for Scotland	6 7 0
		By General Secretary	3 10 0
		By Balance in Treasurer's hands	479 9 7
	<u>£795 14 10</u>		<u>£795 14 10</u>

Audited and found correct,

J. MURRAY LINDSAY, } AUDITORS.
D. HACK TUKE.

J. H. PAUL, } TREASURER.

The PRESIDENT observed that, since that Committee had not met, or had not reported, its appointment must be allowed to drop.

A resolution was passed, moved by Dr. PAUL, that the Council should report upon this subject at the next annual meeting.

The expediency of making certain alterations in the standing rules of the Association was discussed for some little time.

Dr. HARRINGTON TUKE wished the Secretary to be instructed to keep a formal record of all the proceedings of the annual meetings, and to be ready to produce it whenever required.

This, the PRESIDENT observed, should be left for the consideration of the newly-elected Secretary, who would no doubt attend to it.

Dr. HARRINGTON TUKE also recommended that in future the officers of the Association should be elected by ballot.

The PRESIDENT again pointed out that the existing rules only provided a ballot for the election of President; but it might perhaps be thought fit to allow any of the members to claim a ballot at the election of any of the other officers.

Dr. PARSEY thought, in general, the mode of electing the officers was not sufficiently public; and the majority of members, living in all parts of the United Kingdom, were not enabled to take part in it, and therefore could feel no personal interest in it. This might be remedied if, a month or two before the annual meeting, the gentlemen proposed for the different offices were nominated at a special meeting of the Council, and their names then printed, and circulated among the members by post. He now proposed that the Council be requested to consider whether some improvement could not be made in the mode of election, and report to the next annual meeting.

Dr. CAMPBELL suggested that it should also be considered whether proxies might not be used in voting at the election of officers.

Dr. MANLEY wished the report of the Council, with their suggestions for any alteration of rules, to be sent to all the members a month before the next annual meeting.

Mr. THOMPSON desired that a complete copy of the Rules of the Association should be printed for every member, as there were many who had never seen the rules.

The PRESIDENT thought it would perhaps answer the purpose for the Editors to give the rules in the next number of their Journal.

Dr. HARRINGTON TUKE said the rules were embodied in past numbers of the Journal, having had additions and alterations made to them from time to time.

Dr. CLOUSTON recommended that the printing of the rules in a complete form should be deferred till after the Council's report on those concerning the election of officers had been dealt with.

The resolution of Dr. PARSEY, seconded by Dr. YELLOWLEES, was then passed.

Mr. MOULD called attention to an incident which had caused some little disturbance of equanimity among some of their members, but upon which, he felt sure, a satisfactory explanation would be forthcoming. He referred to the way in which Dr. Harrington Tuke, in his evidence before the Parliamentary Select Committee, had spoken of hospital physicians, and of which notice had very properly been taken in the Journal.

Dr. HARRINGTON TUKE most willingly rose to express his intense regret that he had been so entirely misunderstood in the verbal answer he made to a question put to him when he was before the Committee of the House of Commons. Every one who had been in a similar position would know that there was no opportunity of qualifying the direct questions that were put, or refusing to meet them with a direct answer in the same general terms. He was very sorry that his answer was not more guarded, but what he really

meant to say was that while several of his friends—Dr. Rhys Williams, Dr. Maudsley, Dr. Parsons, Dr. Thurnam, and others—were very distinguished members of their profession, who had been connected with Chartered Hospitals, and there were physicians of the highest repute in that position, still the fact was that, at the present day, physicians who held that position did not stand higher than other physicians. He certainly could never have meant to disparage any of the class referred to.

The PRESIDENT thought this explanation would be considered sufficient, as Dr. Harrington Tuke might be supposed, at the time of giving his answer to the question, not precisely to remember which of the distinguished members of the profession were Chartered Hospital Physicians.

The resolution for publishing a complete set of the rules was then agreed to.

The meeting adjourned until two o'clock in the afternoon.

AFTERNOON MEETING.

Dr. CRICHTON BROWNE, the President, again took the chair, and read his address, which appears separately in this Journal (page 445).

Dr. LOCKHART ROBERTSON moved a vote of thanks to the President for his able, eloquent, and interesting address.

This motion was seconded by Dr. BLANDFORD, put to the vote by Dr. RAYNER, and passed by acclamation.

The PRESIDENT having acknowledged it,

Dr. HACK TUKE read his paper entitled "A few Notes on Lunacy in France," which is given in this Journal (page 444). It related his observations in recent visits to some French asylums, both in Paris and in provincial towns, compared with what he saw there about 25 years ago. The main points observed were the practice and opinions that prevail with respect to the very prolonged use of warm baths, the use of the hypodermic injection of morphia, and the practice of the French physicians in regard to mechanical restraint.

Dr. MAJOR thought they were all much obliged to Dr. Hack Tuke for his interesting statement. He wished to know, however, what was the preparation of morphia used for the injections?

Dr. HACK TUKE said it was hydro-chlorate of morphia, and the practice was to inject it into the arm. He was at first rather incredulous, and certainly astonished, when he heard of such a dose being ever used as 15 grains. He said at once that in England they would be afraid of an inquest after such an injection, or even very much smaller doses. It was to be borne in mind that M. Voisin did not begin with these large quantities; they were approached gradually.

The PRESIDENT observed that instances were known of such large doses of tincture of opium as five or six ounces being taken without fatal results.

Dr. RAYNER knew one case of *delirium tremens* in which two ounces of solution of morphia was administered and the man did not die.

Dr. SAVAGE, having been referred to by Dr. Hack Tuke, stated that in one or two cases at Bethlem he had given, by sub-cutaneous injection, doses not exceeding two grains of the preparation of morphia. It had produced no ill effects: one of the patients got rather to enjoy the sensation. Upon one or two occasions they preferred to have it, and felt rather inclined to dance after it. But an important question was to be considered with regard to this treatment—whether it might not tend to produce a craving for morphia? He had been frightened to see that in several cases patients who were in a way to recover had come to like injecting themselves with it. One person, who had been sent down to the Convalescent Hospital, contrived to obtain from a large London druggist, enough to poison herself and all the other inmates together with a syringe. She suffered a relapse, and though he had since heard of her as recovering, he thought her case very questionable. He understood from Dr. Hack Tuke that some French observers were likewise of opinion that there was a tendency to relapse in those cases which had been cured by morphia.

Dr. TUKE—That is so.

Dr. CAMPBELL recollected a paper on this subject, written by Dr. Mackintosh some years ago, in which the statistics were tabulated, showing the results of the sub-cutaneous injection of morphia, and those results were not satisfactory.

Dr. CLOUSTON adverted to both the two chief points in French practice remarked on by Dr. Hack Tuke. In the early part of his own professional life he had made large use of warm baths for cases of acute mania, and in some cases with very marked beneficial effects. Some of the cases he had so treated were, as he had reason to suppose, among the rare cases in which he could pronounce that a cure had really been effected. But, on the other hand, he thought the use of the warm bath was attended with very considerable risk; indeed, there was one case in which the patient actually died in his (Dr. Clouston's) presence while he was watching the treatment of that patient in the warm bath. The temperature of the bath was about 100 degrees, and the immediate cause of death was failure of the heart's action. He recollected two other cases in which there was syncope, but the patients recovered from it. He believed that the warm bath was a most valuable therapeutic agent; but the question was how to use it safely. The hotter the water, the greater would be the reflex action, and the consequent relief to the brain. But as to safety in applying this treatment, he was not aware that any rule had yet been laid down. In the second place, with regard to the use of morphia, he held a very decided opinion. He had used that treatment in one hundred cases or more, and often systematically, at regular intervals, weighing the patient each week, and ascertaining the temperature of the body, in order to know the precise effects of it on the nutrition and general bodily health. He had found only two cases in which the patients gained in weight, and really progressed towards a cure, under that treatment. In general, it was a mere temporary lulling of the excitement, and it tended to diminish the appetite, to interfere with nutrition, usually causing within a month a certain decrease of weight, beside other bad effects. For this reason he had an objection to the morphia treatment. They were all much obliged to Dr. Hack Tuke for his interesting paper.

Dr. SAVAGE read a report on a case of insanity in a woman transferred from the asylum at Peckham to Bethlem Hospital, who died of bronchitis soon after her admission, and who was found by post-mortem examination to be deficient in the structure of the uterus, being without ovaries. The report of this case is published in this Journal (page 450).

Dr. HACK TUKE said that he saw the case, and could testify that the description of the patient's personal appearance was not exaggerated.

A vote of thanks to the Royal College of Physicians for the use of the room to hold this meeting terminated the proceedings, but the members of the Association dined together at the Ship Hotel, Greenwich, in the evening. Several distinguished visitors dined with the Association, among whom were Dr. Risdon Bennett, President of Physicians, Sir Joseph Fayrer, Dr. Acland, President of the General Medical Council, &c., whilst letters of apology were received from the Earl of Shaftesbury, the Lord Advocate, the Chinese Ambassador, &c.

APPOINTMENT OF DR. JOHN SIBBALD AS COMMISSIONER IN LUNACY FOR SCOTLAND.

Dr. Sibbald has been appointed to fill the vacancy caused in the Scotch Board of Lunacy, through the death of Sir James Coxe. The appointment was confidently anticipated in Scotland, and will give great satisfaction. Dr. Sibbald has acted as Deputy Commissioner for seven years, doing thoroughly the arduous work that falls to that office. A Deputy Commissioner is nearly always travelling, having to visit every lunatic and imbecile, either private or pauper, that is boarded in a private dwelling or kept at home, from Shetland to the Solway. To do the work well, needs great conscientiousness, some enthusiasm,

a good constitution to stand the fatigue, and much tact and firmness in dealing with inspectors of poor and parish doctors. He may be regarded, too, as the State paid peripatetic educator of those officials in regard to lunacy and its proper treatment. His work is undoubtedly important, unique, and interesting; but his position is, in many respects, anomalous, and the promotion to the higher dignity, more secure position, less unsettled and more responsible duties of Commissioner, is a reward which any man who is otherwise qualified and has done his duty well, as Dr. Sibbald has done, is fairly entitled to expect.

Dr. Sibbald graduated at Edinburgh University in 1854, and after three years residence in general and special hospitals, was for several years Assistant Physician to the Royal Edinburgh Asylum at Morningside under Dr. Skae, whence he went to take medical charge of the Argyll Asylum. He acted with Dr. Maudsley as editor of this journal, for two years 1870-72, but was obliged by the impossibility of efficiently performing the duties, both of Editor and Deputy-Commissioner at the same time, to relinquish that office. He was Morison Lecturer on Insanity to the College of Physicians, Edinburgh, for 1877.

THE LATE DR. THOMAS HOWDEN.

This most amiable young physician has been cut off in his prime. He was the non-resident Medical Superintendent of the Haddington District Asylum, to the duties of which office he devoted much time and thought. It is in all respects, as we can testify from personal inspection, most creditable to its officers, and demonstrates most certainly that a small institution of that kind for an agricultural county can be well and cheaply managed, without a resident medical officer. So small an institution could not possibly have afforded to secure the entire services of a man like Dr. Thomas Howden. His practice was a most extensive one; he worked incessantly, he was greatly beloved and trusted in, and he died suddenly in harness at the post of duty, his end being hastened by over-work. He was a gentle, silent, retiring, loveable man, who did his duty, and who will be greatly missed.

THE LAW OF THE FUTURE IN REGARD TO THE RESPONSIBILITY OF THE INSANE.

The following is an extract from the new Criminal Code Bill:—"No act shall be an offence if the person who does it is at the time when it is done prevented, either by defective mental power or by any disease affecting his mind (a) from knowing the nature of his act; or (b) from knowing either that the act is forbidden by law, or that it is morally wrong; or (c) if such person was at the time when the act was done, by reason of any such cause as aforesaid, in such a state that he would not have been prevented from doing that act by knowing that if he did do it the greatest punishment permitted by law for such an offence would be instantly inflicted upon him, provided that this provision shall not apply to any person in whom such a state of mind has been produced by his own default. An act may be an offence although the mind of the person who does it is affected by disease or is deficient in power, if such disease or deficiency does not in fact produce one or other of the effects above mentioned in reference to that act."

WITHDRAWAL OF THE COUNTY ADMINISTRATION BILL.

This Bill has been abandoned by the Government for this session. It was anything but satisfactory to County Asylum officials. Every effort should be made by every asylum official who can educate or influence his local M.P. to point out the hardships and injustice of its provisions, and the disastrous effect some of them will be likely to have on the welfare of the insane if they are carried into law.



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PART 1.—ORIGINAL ARTICLES.

On Thought without Words, and the Relation of Words to Thought. By WILLIAM W. IRELAND, M.D.

(Continued from page 438.)

The condition of uneducated deaf mutes often nearly approaches that of a being destitute of language. It is true that even if they are not taught signs they contrive a few of their own invention; but these signs are of a very simple kind, and neither fitted nor intended to express any abstract notions, so that the deaf and dumb are in a much worse condition for obtaining knowledge than the blind. The deaf mute sees everything, but understands nothing; whereas in using the senses still remaining to him the blind man is guided by the words of others into true interpretations. We thus find that the deaf and dumb in the narrow circle of their own cogitations are in a very benighted condition, but it would be absurd to say that they do not possess or exercise reason. After they have become educated and are able to communicate by signs or writing, deaf mutes sometimes detail what they remember of the bounded state of their intellect before being sent to school. They record accidents and events which have made an impression on their mind; but it is clear that their speculations upon the nature and causes of things have never gone below the surface. In the Reports of the American Asylum at Hartford, there are a number of answers to questions put with a view to find out what were the thoughts of uneducated deaf mutes. One of them when asked, What did you formerly think when you saw a person die? replied that he thought "he was deceiving the people, and that he would rise up." He thought that "a man that was died was buried alive, and wondered that he did not rise from the dead in a few days." Other deaf

mutes by observing that the dead bodies of animals rotted away, arrived at a nearer idea of death. They rarely thought that they would die themselves, and an existence beyond the grave occurred to none. Many attended public worship for years without knowing what was the object of it.

In regard to the origin of men and animals, we are told in the Forth-sixth Annual Report, they were found not to have reflected much, if at all. One or two seemed to have formed the opinion that the world had always existed, and that there had always been a succession of the beings inhabiting it; while most of them had not given a single thought to the subject. The following quotations are taken from their answers to the question on this point:—

“I never attempted to suppose who made the world, nor how it came into existence.” “I had no idea of the beginning of the world nor of the beings it contained.” “I knew nothing concerning the origin or the beginning of the world.” “I had never reasoned about the origin of the world.” “I had thought that the world and beings were always the same.” “I believe I used to think that this world stood itself always, and that the people too were descended from generation to generation without origin.”

As has been already observed, it is too hasty an assumption that the mind can only attend to one object or mental process at once. In some states, such as in reverie or dreaming, or where great concentration of mind is used, the whole attention may be lavished upon one subject; but in general there are a number of parallel acts of consciousness going on. We have a more or less vivid sense of our antecedents, our position, of the lapse of time, and other accompanying circumstances. We do not remember, or at least quickly forget all our parallel acts of consciousness, our memory generally running back along that line to which we have paid the most attention. We can carry on two distinct mental processes much more easily than two similar ones. Thus we can go on thinking and riding, or thinking and skating better than thinking on two subjects at once. We can remember the words of a song and the music at once, and go on dancing at the same time much easier than remembering the words of two songs at once. Occasionally, I have succeeded in attending to two parallel lines of thought, and what is more difficult in recalling them to memory. Once when reading a French book, some one addressed me, when I both listened, answered, and at the same time went

on reading the book. On interrogating my memory, I found that I could recollect both what I heard, what I had answered, and what I had read. It would appear that this faculty of attending to many things at once or seeing several things at a glance can be increased by practice.

“Robert Houdin relates, in his autobiography, the mode in which he prepared himself and his son for the performance of the trick which he termed ‘second sight;’ the success of it mainly depending upon the rapidity with which the information given by sense-impressions could be apprehended and interpreted, and the accuracy with which (for a short time at least) they could be remembered. In the first instance Houdin put down a single domino, and required his son to name the total number of points, without counting them, which each could readily do. Two dominoes were then tried, and after a little practice, the total number of points on both was correctly named by each at the first glance. The next day the lesson was resumed, and they succeeded in naming the points on four dominoes at a single glance; on the following day those of six; and at length they found themselves able to give, without counting, the sum of the points on twelve dominoes. This result having been attained, they applied themselves to a far more difficult task, over which they spent a month. The father and son passed rapidly before a toy shop, or any other displaying a variety of wares, and each cast an attentive glance upon it. A few steps farther on each drew paper and pencil from his pocket, and tried which could enumerate the greater number of the objects momentarily seen in passing. The son surpassed the father in quickness of apprehension, being often able to write down forty objects, whilst his father could scarcely reach thirty; yet, on their returning to verify his statement, he was rarely found to have made a mistake.”*

This accomplishment was utilised in persuading people that the son possessed the gift of clairvoyance. It may be said that the mind passes very rapidly from one object of attention to the other, and that we thus mistake processes which occur successively for processes which occur simultaneously, though, if these processes appear simultaneous, the presumption surely is that they are so till

* Quoted in a lecture on “Modern Spiritualism,” by W. J. Marshall, M.D., Greenock.

this is disproved. If we imagine ourselves conscious of viewing four bodies at once, while we really view them in succession, here is an instance of four mental processes, accompanied by consciousness, in which the succession of three of them has instantaneously passed out of the memory.

We can remember words both as sounds and as symbols; the latter is a double process, in which we remember the word and the idea too. Sometimes the word fails to recall the idea, or the idea fails to recall the word; and sometimes we have ellipses of thought without words. In general, however, the word forms the link between the object and the memory of it. There is a remarkable mnemonic power in speech. Thoughts unassociated with words very soon die away from the memory. Even intense feelings, when never expressed, are soon forgotten.

There is no doubt that speech powerfully supports thought. Our words are definitions which contain ideas more or less generalised and common to different minds. We thus learn to fix our own ideas, and to follow the order of the thoughts of other men, so that we can build up conclusions from one stage to another and go back to examine what we have done. In arranging words, like builders erecting a tower, we lift the materials which in turn elevate us to a higher position. With ordinary men, educated through words, it is easy to see that there must be a great difficulty in carrying on a train of abstract thought without symbols, whether spoken or written words, figurative signs like those of the deaf and dumb, or ideographic characters like those of the Chinese. At the same time, when some writers pronounce that we could have no abstract ideas without words, I cannot even pretend to understand what they mean. A child recognises that one colour is common to snow, milk, the lily, a piece of paper, and to a bit of chalk. Can he not hold this in his mind without the word white, or albus, or blanc? Is it not clear that though men cannot communicate their abstract ideas to one another without words, that the ideas must be gathered in the mind before the mind recognises it, so as to give it a distinctive name, just as a flower must be known to the sight ere it is labelled with a title? Imbecile children often recognise and separate colours and short numbers before they know their names. Perhaps people may somewhat overlook how much abstract ideas enter into our daily life. One cannot spend a shilling in buying different articles without having recourse to abstract notions.

Jessen remarks* that "the greatest thinkers, as was the case with Newton, can so bury themselves in their own thoughts that they neither see nor hear what is going on before them. They think, no doubt, in such moments without words, which only arise when, through reflection, they have arrived at a result. On this account his biographer assures us Newton could give no account of the manner and way in which he had arrived at the results of his thinking, for we remember our own thoughts and their course only by means of the words by which they are represented."

It seems possible that a very superior mind might gain now and then in dealing with ideas unrepresented by symbols, but this assuredly is not the ordinary course of thought with ordinary men.

No doubt words sometimes impede thought, as language not copious enough, and of inferior construction and cultivation, and full of ambiguous phrases or equivocal inflections, leads men into illogical paths. Moreover, all speech tends to lead men from what is particular and incommunicable to what is felt in common and can be easily described. Therefore, our attention is powerfully drawn from the subjective to the objective, and we cease to think of what is difficult to express in words. Thus speech, while it leads the mind to some things, may lead it away from others.

While running alongside with speech there are occasions in which thought asserts its distinctness. We elaborate ideas, but find that we cannot express them in words; we think of persons or things, we have the conception in our mind, but the names and the words do not come; we propose one expression after another, and reject them successively, till our memory supplies the word or combination of words of which we are in search, or perhaps, after groping for a while, we abandon the attempt to clothe our meaning in words till we are in a happier vein or we find what expresses our ideas in the works of some master of language. Men coin words or adopt them from foreign tongues, and if they express ideas not already fitted by suitable symbols, they soon fall into common use.

In some minds there seems to be a disparity between the power of thinking and the power of expressing thoughts. Men who approach close to a subject and bring out new

* "Verhältniss des Denkens zum Sprechen, Allgemeine-Zeitschrift für Psychiatrie." Band xxii., p. 366. 1865.

views sometimes have a great difficulty in stating their thoughts in words. John Hunter is a memorable example of a man of this type. "One of the few intellectual defects that can be traced in him," says Paget, "was the great inequality of his powers of language and thought. In every mind thoughts and words are so interwoven that each shares always the qualities of the other. Thoughts and words are like mutual reflectors: if either of them distorts an object placed between them, the other cannot but receive the distorted image and reflect it. Or each is, alternately, master and servant. Now, thought employs words for its expression, and then these same words take part in directing the next thoughts. If either be defective or erroneous, the other suffers.

"Hunter was a great master of facts, and in plain and customary English he could with great power collect, compare, arrange, and construct whatever could be made from them; but he was not a master of words. His large, strong mind does not in anything show that subtilty which, whether in thinking or in writing, can accurately employ many words of scarcely different meanings—a quality which is very necessary for the consideration of abstract ideas, and in which a defect is a hindrance, not only to the expression of thoughts, but to the process of thinking.

"Hunter's defect in this respect may have been due, in part, to his neglect of early education, but chiefly, I think, it was natural. In many other things he corrected all the faults that could be referred to neglected education; in language, whether in speaking or writing, he was, to the last, deficient; and his thinking power, strong as it may have been by nature, was hindered and baffled by its weak associate." †

Hunter's knowledge was of a thoroughly real character: he did not think through the thoughts of other men, but interrogated Nature closely. Perhaps this was one of the reasons he hesitated in words. With so many gaps in his knowledge as one must feel who deals with Nature as an investigator, with so many unsatisfied questions in his mind, he might hesitate at accepting ordinary words as definitions, for no true thinker is ever satisfied with words as most men use them.

The study of aphasia has already thrown much light not

† Paget, "Hunterian Oration," 1877, p. 18.

only on the physiology of the brain, but upon the mental characteristics of speech; and as cases accumulate, and are more carefully analysed and compared, we may expect to learn more. Often the record of interesting cases has been neglected or rendered of dubious value by the want of the preliminary knowledge requisite to examine an aphasic so as to bring clearly out the distinctive failings. To enlarge upon the subject at present would take up too much room, but I am unwilling to conclude without alluding to the confirmation derived from aphasia of the principles laid down in this article.

Dr. J. Hughlings Jackson states a view, shared by Bain and Ferrier "that when we remember a word there is faint excitation in the highest centres for articulatory movements; when we remember, and also say that word aloud, the excitation is stronger, and currents spread down to lower centres of movement, and these reach the articulatory muscles." We have seen that as some imbeciles understand speech without speaking themselves, their language may consist purely of remembered sounds. Probably normal speech is made up of remembered sounds, the excitation of motor articulatory processes and the mental recognition of such excitations. At any rate, we know that, by a destruction of a small part of the brain, the under surface of the third left frontal convolution, where it overlaps the island of Reil, a man may be suddenly deprived of the power of speaking.

The variations of aphasia are often very perplexing to one who wishes to reach some stable generalisation. The movements of the tongue and other parts of the vocal apparatus are not paralysed, though there is often a greater or lesser amount of hemiplegia on the right side; the power of speaking is lost, but the patient can understand what is said to him. The power of writing is lost with that of speaking, save in those rare cases in which the patient can still trace words which he can no longer utter. Sometimes the aphasics can read writing; sometimes, though, they can neither read nor speak—they can repeat words said to them, or copy writing. In many instances the mind is more or less weakened. The material lesion of the brain is not always fixed to one spot; but, in the great majority of aphasics, it is situated in the left side, and near the operculum or the island of Reil. Dr. Ferrier's experiments by the electric excitation of the brain show that movements of the lips and

tongue may be aroused by the application of the electrode to analogous parts of the brain in monkeys, dogs and other animals.

In aphasia, all the intellectual powers, save those concerned in the utterance and reception of words, may be left unaffected. The patient can use all his senses, act intelligently, play at cards, draughts or dominoes, and in other ways show powers of foresight and calculation.

Trousseau had a patient who was seized with aphasia while he was sitting at whist; he played with his usual ability, and noticed nothing amiss till the game was over, when he found that he had lost his speech. A little after it was ascertained that he was unable to follow the words in a book. The application of leeches caused the aphasia to disappear, when he was able to explain what he had experienced.

Dr. Lordat, a distinguished Professor of Medicine at Montpellier, after a fever suddenly lost for several months the power of speech. So thoroughly was the memory of words destroyed that he did not understand a single word said to him. But he tells us that he could combine abstract ideas, and distinguish them properly, without having any word to express them, and without thinking at all about their expression. "I experienced," says M. Lordat, "no embarrassment in the exercise of thought. Accustomed for so many years to the work of instruction, I was able to arrange in my head the principal propositions of a lecture, and to find no more difficulties in the changes that I chose to introduce in the order of my ideas." Trousseau has stated his conviction that Lordat was labouring under an illusion, and that the intellectual faculties of the learned Professor had in reality suffered more than he was aware of. Trousseau remarks that before the attack of aphasia in 1828 Lordat delivered his lectures in an admirable manner without any notes; but, after the cure of the attack, he could not even deliver from memory the lectures already written out, having always to read them off from the manuscript. Trousseau argues from this that Lordat's intelligence must have been profoundly altered, and his strictures are re-echoed by Kussmaul.* But

* *Op. cit.* p. 20, 21. Dr. Augusto Tamburini, in his able "*Contribuzione alla Fisiologia et Patologia del Linguaggio, Reggio-Emilia*," 1876, after referring to Lordat's case, observes: "It is evident that verbal formulæ are not absolutely necessary to the exercise of thought, especially when it occupies itself with the objective and the concrete."

it might be replied that the fact that Lordat had to read his lectures only proved that the power of expression was permanently injured, which may be granted without affecting the argument. Kussmaul's observation that Lordat had already accumulated a rich store of ideas through language is more to the purpose. That thought should be carried on under increased difficulties, when disconnected with words, is what might be expected; but we have so many attestations from aphasics that they could observe, reason and reflect while words were wanting, that we may confidently appeal to the results of the study of disordered conditions of speech following disease of the brain for a confirmation of our views. In reading over papers on aphasia, we have occasionally been struck by apparent incongruities of thought, and would have liked to be able to ask a few questions of the authors. For example, do these learned anatomists hold that all thoughts, or at least all abstract ones, come into being in one small corner of the brain, at the flap end of a convolution, away from the central parts of the great hemispheres, and out of the direct line of the conducting tracts? What function is left to the rest of the left hemisphere? Has the right hemisphere nothing to do with abstract ideas? Or, if it requires to get its inchoate abstractions something better than "automatically registered," is it obliged to get them passed over to the left side of the brain to be finished off by the end of the third frontal gyrus, the true seat of all abstract thought?

I do not profess to have completed a survey of the subject, which has still its obscure questions; but, in assigning a more limited rule to speech, I think that there is an accordance between mental analysis and anatomical and physiological data.

Physiology and Pathology of the Sympathetic System of Nerves.
by Dr. A. EULENBURG, Prof. of Medicine, Univ. of Greifswald, and Dr. P. GUTTMANN, Privat Docent in Medicine, Univ. of Berlin. Translated by A. NAPIER, M.D., Glasgow.*

(Continued from page 426.)

VIII.—ANGINA PECTORIS.

The disease described by Heberden (1768) as Angina Pectoris, which is sometimes also termed Stenocardia, is not an anatomically definable cardiac affection, but rather a group of symptoms, originating in very different and for the most part unknown conditions. Although, therefore, we include a short account of it in this essay, we do not wish to indicate it as our belief that it is caused exclusively by changes in the sympathetic system, but that it seems to us that the latter, inasmuch as it takes the principal part in the formation of the cardiac plexus—which is almost certainly the starting point of angina pectoris—is undoubtedly in some way connected with the occurrence of the phenomena under consideration.

Angina pectoris shows a marked tendency to occur in paroxysms, occasionally spoken of as stenocardiac attacks. It appears as a complication in the most diverse diseases of the organs of circulation, relatively most often in affections of the aorta (insufficiency of the aortic valves, atheroma, &c.). Parry, however, held that its most common cause is to be found in the changes (ossification and contraction) which take place in the coronary arteries as the result of aortic insufficiency. But angina pectoris is not unfrequently met with also in cases in which no alteration in the coronary arteries, or any other affection of the heart, is noticeable; and, on the other hand, ossification of the walls of these vessels has been found on examining the bodies of old people who, during life, had never suffered from anything resembling stenocardiac attacks. Thus, besides the organic form of angina pectoris, that which is associated with structural

* It should be stated that it was for this Essay that the Astley Cooper Prize for 1877 was originally awarded to Drs. Eulenburg and Guttmann—a decision, however, which was subsequently overthrown on the technical ground that the paper was the work of *two* authors, and not of one only—as the terms of Sir A. Cooper's will seem to require. This essay having been handed in in October, 1876, there are no references to any papers on the subject written since then.

cardiac disease, some have recognised a nervous variety, designating it hyperæsthesia (neuralgia) of the cardiac nerves, especially of the cardiac plexus. Other authors affirm that the essential elements of the disease are excitement of the heart's action and the neuralgic character of the seizures. We adopt in its entirety the theory that angina pectoris is not simply a disorder of sensibility, but a complex sensorimotor neurose of the cardiac nerves. We consider it impossible, however, to particularise with certainty what nerves are concerned in the attack itself; the cardiac nerves anastomose so freely, and spring from such widely separated parts of the nervous system, that the existence of an anatomical affection or functional disturbance confined to those branches of the cardiac plexus coming from the vagus or sympathetic nerve seems scarcely within the limits of possibility. No anatomical changes have yet been observed, associated with angina pectoris, in those parts where the nerves of the heart run separately—in the cardiac twigs of the vagus, for instance, or in the branches which emerge from the cervical ganglia of the sympathetic. The phenomena also of the attack itself, especially the disturbance of the heart's action, are so variable that we cannot ascribe them to the influence of any single system of cardiac nerves. If, for example, in one case we account for the acceleration of the action of the heart by assuming a state of irritation of the sympathetic nerve, this explanation will not meet those cases in which, during the paroxysm, the heart contracts more slowly than usual, or scarcely departs from its normal rate. In discussing angina pectoris, therefore, we cannot argue from the state of any *one* system of cardiac nerves, but can only analyse the symptoms physiologically, and endeavour to show, on experimental grounds, in what way the different systems of nerves *may* be concerned in producing the disease.

Here we meet with the difficulty that the symptoms of the stenocardiac attack have been described very differently by different observers. The neuralgic symptoms alone—pain of a paroxysmal character associated with great oppression and anxiety—are constant and pathognomic. The pain appears to rise in the neighbourhood of the præcordia, and to pass sometimes over the left side of the chest, sometimes along the sterum towards the *left* arm, more rarely into both arms.

The motor phenomena—those connected with excitement

of the motor nerves of the heart—are much less characteristic of the disease than the above-mentioned sensory disturbances. Some have described the heart's action as nearly normal, some as increased in force and associated with palpitation and a full pulse, and others as diminished in force and accompanied by a small quick pulse. The last observation has given rise to the theory that angina pectoris consists of spasm of the heart, whereby the contractions are rendered very weak and incomplete; hence the term "stenocardia." Occasionally, however, while the heart *appears* to be acting vigorously, its real force is but slight, since, in spite of its apparently powerful contraction, the radial arteries show only a small degree of elevation and tension—at least, towards the end of the attack (Lauder Brunton *).

With respect, also, to the respiration, the observations on record are quite at variance with each other. It is sometimes stated to be quick, sometimes slow, and occasionally not at all involved. Our own experience leads us to adopt Parry's † conclusion, that the changes in the respiration are principally, perhaps even solely, due to the pain.

These contradictory statements may be explained by Eichwald's ‡ clinical observation, that even in one and the same patient the state of the respiratory and circulatory organs varies greatly, according to the duration of the attack and the exact stage at which the examination is made. Thus, in the same case the action of the heart may be found either excited and powerful or weakened, or there may be great dyspnoea or perfectly tranquil respiration. The more violent the attack the more marked may be this contrast. During the paroxysm, when the pain is most severe, the force of the heart's contractions seems to be lessened, while in the painless intervals it appears to be increased. Severe cases are marked by a succession of attacks, the patient, during the intermissions, being free of pain. Less acute cases consist sometimes of only *one* such paroxysm, in which the movements of the heart and respiratory organs may be nearly normal. In the physiological analysis of the phenomena, however, we must keep before our minds only the most typical cases, and in these the action of the heart is always more or less affected.

We thus regard the substernal pain, the feeling of anxiety,

* "Lancet," 1867, July 27, p. 97.

† See Stokes, "Lehrbuch der Herzkrankheiten," p. 398.

‡ "Würzburger med. Zeitschrift," 1863, Band iv., p. 249.

and the disturbance of the heart's action, as the essential symptoms of angina pectoris, and the changes in the respiration, for the most part, as only the result of the pain. How far these conditions may be ascribed to disordered innervation of the heart we will now attempt to show.

The *pain* which ushers in an attack has its origin, doubtless, in the cardiac nerve plexuses. This assumption is supported by the circumstance that the pain always rises in and remains fixed at the part corresponding to the situation of the heart, and here, also, is most intense. There is also no affection of any part in the immediate neighbourhood of the heart which gives rise to such striking and unmistakeable symptoms; those, especially, of gastrodynia (cardialgia) bear no resemblance to the paroxysms of angina pectoris, and may be excluded from further consideration. In its normal state the heart has certainly little sensibility; that, nevertheless, an irritation of its sensory nerves under pathological conditions should produce so much pain is as little to be wondered at as the like result occurring in other organs having their innervation from the sympathetic—in the stomach, intestines, &c., for example. The heart receives its sensory nerves, not only from the vagus, but also from the sympathetic; for when both vagi are divided, and the heart is subjected to mechanical irritation, the animals so operated on (rabbits), as Goltz * has noticed, give indications that they feel pain.

It thus appears pretty certain that the sympathetic, which forms such a large part of the cardiac plexuses, contains nerves of sensation. It has also been justly remarked that the nature of the pain in angina pectoris shows great analogy to that of irritation of the sympathetic nerves, as in affections of the gall-ducts (gall-stone colic) of the stomach (cardialgia), &c.

This neuralgia of the nerves of the heart is in some cases idiopathic, but is more often the result of direct irritation. One naturally thinks of such a theory in certain organic diseases of the heart, such as ossification of the coronary arteries and aortic valvular deficiencies; the cardiac plexus also lies so close to the arch of the aorta (below and behind it), with the aortic plexus very near it, that morbid changes going on in the walls of that vessel may readily cause direct mechanical irritation of the plexuses in the immediate

* Virchow's "Archiv," 1863, 26th Band, p. I.

vicinity. Why these acute attacks of pain occur only as paroxysms at certain intervals, whilst the hypothetical cause which gives rise to them continues uninterruptedly in operation, is as difficult to explain in this as in other paroxysmal neuralgias.

As regards the causes of the pain in those cases in which organic changes in the heart are wanting, we cannot even guess what they are. It cannot have its *only* origin in the change in the heart's action, whether the power of the heart be increased or diminished, as the most extreme departure from the normal standard in that respect, both the increased action of hypertrophy and the decreased action in fatty degeneration, may indeed produce a sensation of anxiety, but is never associated with pain at all resembling that of angina pectoris. When the heart's action is affected to only a moderate degree it is very frequently not perceptible by the patient.

In explanation of the transmission of the pain from the præcordial region to the other parts of the body, especially to the left arm, we must devote a few words to the anatomical relations of the cardiac plexus, its composition, and its connections with the nerves of the arms and neck. The *cardiac plexus* is composed of the cardiac branches of the vagus and the cardiac nerves, the latter rising in the cervical ganglia and the first thoracic ganglion of the sympathetic. The *ganglion cervicale supremum* of the sympathetic, in which the *superior cardiac nerve* originates, has several connecting branches with the three or four upper cervical nerves, which, again, contribute to the formation of the cervical plexus; further, the superior cardiac nerve anastomoses in the neck with twigs from the descending branch of the hypoglossal nerve, which also receives filaments from the second and third cervical nerves. The superior cardiac nerve is thus seen to have intimate relations with a number of the cervical spinal nerves.

The *ganglion cervicale medium*, from which proceeds the *middle cardiac nerve*, communicates with the fifth and sixth cervical nerves, sometimes also with the vagus and phrenic nerves.

The *ganglion cervicale inferius*, from which the *inferior cardiac nerve* rises, sends branches to the sixth, seventh, and eighth cervical nerves and the first dorsal nerve. The four lower cervical nerves, however, and the first dorsal nerve, join to form the brachial plexus, and thus we find that the

lower cervical ganglion and the inferior cardiac nerve rising from it are in connection with the brachial plexus. In addition to these should be mentioned the repeated anastomoses of the sympathetic with the vagus; the ganglia of the former are in communication with branches of the latter, both with several rising from its trunk, and with the superior and inferior laryngeal nerves; and the vagus, again, is joined to the cervical nerves by a twig passing from it to the descending branch of the hypoglossal nerve. The cardiac plexus is abundantly connected by branches with the thoracic aortic plexus and the coronary plexuses of the heart. The occurrence of pain during the stenocardiac attacks in the *regions supplied by the cervical nerves* is thus explained by the communications existing between the cardiac plexus and the anterior divisions of the four upper cervical and first dorsal nerves, while the painful sensations radiating towards the *left arm* may be said to be due to the participation of the anterior division of the first dorsal nerve in the formation of the lower cord of the brachial plexus. That the pain is felt more frequently in the left arm than in the right is, perhaps, partly owing to the fact that the heart and aorta are situated more towards the left side of the body than the right, so that disease in the aorta is more likely to involve the nerves of the left side; it is also partly the result of the freer nervous anastomoses on the left side than on the right. The pain occasionally reaches the front of the chest, passing, probably, through the fasciculi which connect the dorsal spinal nerves with those of the brachial plexus. There are also radiating pains in the region of the diaphragm, which may be traced to the connection between the phrenic and the cardiac nerves, through the fourth and fifth pair of cervical nerves. The phenomena sometimes observed in the domain of the vagus—difficulty in swallowing, nausea, dysphonia—may be referred to the numerous anastomoses of the nerve with the sympathetic, especially to those between the cardiac plexus and the cardiac branches of the vagus. The communications of the cardiac plexus with the aortic and coronary plexuses explain the frequency of the stenocardiac attacks when the coronary arteries are ossified and contracted.

Sometimes we find the pain of angina pectoris confined to one part, such as the præcordial region, at other times radiating in the direction of the different nerve trunks. This depends to a great extent, next to simple mechanical conditions, on the intensity of the original irri-

tation of the cardiac plexus. As in other neuralgic affections, we may assume that the number of nerves involved increases with the intensity of the pain. In some cases which were under our own observation some months we found that the more acute the primary pain in the præcordial region the greater was its radiation, and that in cases of less intensity there was almost no radiation towards the left arm, the pain reaching only as far as the shoulder, while on the front of the chest it was but very slight.

The sensation of oppression and anxiety must be regarded as depending on the præcordial pain—at least such a relation seems to us to be more probable than the idea that it is the result of a change in the action of the heart. We have already, while discussing the præcordial pain, referred to such a theory, and may also here repeat that when there is obstruction of the circulation, such as occurs in the various valvular defects to a greater extent than in angina pectoris, this feeling of anxiety is absent.

Having discussed the neuralgic phenomena of the stenocardiac attack, we come now to the consideration of the *causes of the motor disturbance of the heart*.

As already stated, we cannot proceed on the assumption of excitement of any *single* system of cardiac nerves as the cause of these disturbances; we can only analyse the phenomena according to our present knowledge of the innervation of the heart, and so endeavour to show in what way the symptoms may be truly explained.

Three systems of nerves are concerned in the innervation of the heart—first, the *automatic* (ganglionic) system; secondly, the *vagus* system, which *moderates* the heart's action; thirdly, the *sympathetic* nervous system. Alteration in the action of any one of these may lead to the phenomena in question.

We refer first to the *automatic system* of cardiac nerves.

The heart continues its rhythmical action some time (in cold-blooded animals some hours) after being removed from the body. The sources of innervation necessary for this action are the groups of ganglia that lie embedded in the muscular tissue of the organ. Influences which arrest the functions of these ganglia, or of the muscular structures under their control, immediately cause the contractions of the heart to cease. An example of this is seen in the effect of different cardiac poisons introduced into the ventricular cavities of frogs, or when the entire heart is immersed in poisonous

solutions. Landois* has shown that the disturbance of the automatic action of the ganglia by the direct influence of certain poisons may be of two varieties—on the one hand stimulation, on the other depression, or even paralysis, of the heart's action. *Weak* solutions of various substances, brought into contact with the endocardium (in the frog), *irritate* the ganglionic cells lying underneath, and excite the heart to *increased activity*; *strong* solutions quickly paralyse the ganglia, and at once *arrest* the contractions of the heart.

In a way similar to that in which the above-mentioned physiological phenomena are brought about, the cardiac ganglia may be affected under pathological circumstances. If the rhythm of their action be disturbed by any cause, by abnormal *resistance* to the circulation of the blood (as in valvular insufficiency and atheromatous processes in the aorta), or if the blood-supply to the ganglia be inadequate (as in *contraction* or closure of the *coronary arteries*), or if, as is improbable, the ganglia become involved in diseases of the muscular tissues of the heart (such as myocarditis or fatty degeneration), an alteration in the action of the heart may take place, and that of one of two kinds: either the frequency of the contractions is *increased* when the above-named conditions give rise to *irritation* of the ganglia, or it is *decreased* when the influence is of a *paralysing* nature. The fact that in the stenocardiac attack this force is observed to be sometimes increased and sometimes diminished, is quite consistent with the assumption that this change may be connected with alteration in the function of the automatic ganglia; and as when poisonous solutions are injected into the endocardium the above-noticed contradictory phenomena follow, according to the degree of concentration, so one may suppose that the pathological irritation, according to its intensity, may be followed by increase or diminution of the heart's power.

In support of the theory that the ganglia are affected, perhaps in consequence of an inadequate blood-supply (as in aortic insufficiency and contraction of the coronary arteries), we may quote the experimental fact that after artificial closure of the coronary arteries the contractions of the heart are diminished in frequency, and in a short time cease, but return with perfect regularity when the ligature is undone. (v. Bezold.†)

* "Greifswalder medicinische Beiträge," ii. Band, 1864, p. 161-177.

† "Centralblatt für die med. Wissenschaften," 1867. No. 23.

The heart symptoms, at least in some cases, may be caused by disorder in the second of the above-mentioned cardiac systems of nerves—the *inhibitory* system of the *vagus* nerve. Thus, cases occur in which the pulse is retarded. Eichwald has observed many such, in which the pulse was at first slow, full, and hard, but subsequently, when the paroxysm had lasted somewhat longer, irregular, intermittent, or even imperceptible. These pulse-phenomena correspond to those observed when the vagus nerves in the neck are subjected to electric stimulation; thus we may assume that it is irritation of the vagus which gives rise to the slow pulse in the above-quoted cases of angina pectoris. In the majority of stenocardiac seizures, however, the pulse is accelerated, which points to the conclusion that the cardiac branches of the vagus are for the time paralysed, so that the restraining power usually exercised by them is diminished.

No pathological change in the vagus has yet been demonstrated in simple, uncomplicated angina pectoris. There is recorded, however, a case resembling this disease in many particulars, in which the vagus was found to be affected. The most striking symptom presented by the patient, who was in Skoda's clinique, and whose case is described by Heine,* was that the action of the heart was frequently *completely suspended* for some seconds, usually for a period that should have been occupied by 4-6 beats; he had also an indescribable sensation of anxiety like that in angina pectoris. On *post-mortem* examination, Rokitansky found the right phrenic nerve thrown up into dark blue knots and interspersed with chalky concretions. The *great cardiac nerve*, passing upwards from the plexus situated between the descending aorta and the pulmonary artery, united with the cords composing the sardiac plexus to form a black swelling of the size of a hazelnut just under the arch of those vessels, and was considerably thickened before passing into this enlargement. The *branches of the left vagus*, descending in front of the left bronchus to the pulmonary plexus, were found to be similarly involved in a dark-bluish tumour formed by a lymphatic gland.

There is also a form of angina pectoris occurring in diseases of the abdominal organs, which, on physiological grounds, we may regard as a reflex neurose of the vagus. This theory rests on the physiological fact that by irritating

* "Müller's Archiv für Physiologie," 1841, p. 236.

the sympathetic nerve in the abdominal cavity (as in Goltz's percussion experiment), one may arrest the heart's action in the diastole—exactly what follows direct irritation of the vagi in the neck. It was shown in the physiological part of this work that this effect on the heart is produced through nerves which excite the vagus by reflex action, which nerves are distributed in the trunk of the sympathetic and pass through the ramicommunicantes to the spinal marrow between the third and sixth vertebræ. After division of the vagi irritation of the abdominal sympathetic has no influence on the heart. In a similar way, it may be assumed that stenocardia, in diseases of the abdominal organs, is often due to a reflex disturbance of the heart by pathological irritation of the abdominal plexuses.

Finally, the phenomena of angina pectoris, with respect to the action of the heart, may also be explained by a condition of irritation in the *cervical or thoracic parts of the sympathetic*, which contain, as was formerly shown, the accelerator nerves of the heart.

The sympathetic may also be in another way concerned in these changes. Since the vasomotor nerves of the heart come from the sympathetic, any functional disorder of these is followed by a *change in the tone of the vessels*, and, therefore, by a *change in the blood pressure*, which may react on the heart in two ways: When the vasomotor nerves are *irritated*, the vessels *contract*; but when *paralysed*, *dilatation* of the vessels ensues. In the first case the action of the heart is rendered more energetic because the narrow peripheral channel offers an obstruction to the emptying of the heart, and *raises both the blood-pressure in the aortic system and the frequency of the pulse*; in the second case, on account of the diminished resistance to the circulation of the blood, the pressure in the aorta *becomes less*, the heart acts more feebly, and the frequency of the pulse is lowered. Cahen* long ago advanced the theory that certain cases of angina pectoris might be connected with the vasomotor fibres of the sympathetic. Some time after Landois,† and then Nothnagel,‡ recorded cases of angina pectoris, which they ascribed to *general arterial spasm*, frequently produced by the influence of cold in persons otherwise healthy; therapeutical agents

* "Archives générales de Méd.," 1863, Vol. ii., p. 564-570, and p. 696-698.

† "Correspondenzblatt für Psychiatrie," 1866.

‡ "Angina pectoris vasomotoria," "Archiv für klinische Medicin," 1867, Band iii., p. 309.

which relieved this state of spasm (such as irritation of the vessels of the skin, application of warmth) also arrested these attacks.

Pathological anatomy furnishes us with only one, but a very important, fact, which goes to support the theory that the sympathetic is concerned in the production of this disease. In the body of a man, 45 years of age, who died in an attack of angina pectoris, from which he had for a long time suffered, Lancereaux * found pathological alterations in the cardiac plexus. We quote the report literally:—

“A l'autopsie on constata l'existence d'une lésion de l'aorte. Entre les deux orifices des artères coronaires rétrécies au point de permettre à peine l'introduction d'un stylet, se trouve une plaque saillante de plusieurs centimètres d'étendue, à rebords festonnés, et composée en grande partie de tissu conjonctif de nouvelle formation. Situé entre la couche interne et la couche moyenne le néoplasme paraît contenir dans son épaisseur de fines arborisations; la tunique externe de l'aorte était le siège d'une vascularisation anormale extrêmement riche. *Le plexus cardiaque participait à cette vascularisation*, et quelques uns de ses filets se trouvaient compris dans une sorte de gangue ou de plasma appliqué à sa tunique externe épaissie. L'examen microscopique des filets nerveux et des ganglions montra d'une façon positive que des nombreux noyaux ronds se trouvaient interposés sous forme d'amas entre les éléments tubuleux qu'ils comprimaient plus ou moins; la portion médullaire de ces éléments était d'ailleurs grisâtre et grenue.”

We also, in several cases, have made a therapeutical trial of galvanisation of the sympathetic in angina pectoris, but have not been rewarded by any very evident good result. On the other hand, Cordes † reports that he produced very manifest improvement in one case by galvanising the left sympathetic. This case, which was of the kind formerly spoken of as angina pectoris *vasomotoria*, is specially interesting, as the left sympathetic was painful and evidently irritated, and there was a persistent dilatation of the left pupil.

To sum up, we would state that the symptoms in angina pectoris may be referred to various causes, some of which

* “De l'altération de l'aorte et du plexus cardiaque dans l'angine de poitrine,” *Gaz. méd.*, 1864, p. 432.

† Cordes, “*Deutsches Archiv für klin. Med.*,” 1874, Bd. xiv., p. 141. v. Hübner, also, has got the most favourable results from galvanising the sympathetic in one case of angina pectoris. “*Archiv für klin. Med.*,” 1873, Bd. xii.

may be external to the heart; that probably all the cardiac nerves, and the ganglionic apparatus of the heart, co-operate to a greater or less degree; and that the variable character of the phenomena observed in different cases may be traced to the greater or less share taken by the different nerves forming the cardiac plexus. *The sympathetic is probably most considerably involved*, as it takes the principal part in the formation of the cardiac plexus.

IX.—ADDISON'S DISEASE.

Bronzed Skin.

In the great majority of cases of Addison's disease degeneration of the suprarenal capsules has been found, and the inference has been, with perfect justice, made, that that degeneration must be, in some way, connected with the clinical symptoms of the disease. The objections, that diseases of the suprarenal capsules occur without bronzing of the skin, and that instances have been observed of complete absence of these bodies in men who were quite healthy during life,* do not weaken the above theory. Another question is whether the only cause of bronzed skin is to be sought in degeneration of the suprarenal bodies, and whether the latter is the primary or the secondary affection.

After Addison had drawn attention to the suprarenal capsules, physiologists soon attempted to determine experimentally what the hitherto unknown function of these bodies might be. The results of these researches, however, did not support the assumption that the cause of Addison's disease is to be found in affection of the suprarenal glands. Brown-Séquard† certainly observed that death occurred very quickly on extirpating the suprarenal capsules in animals; further, after the extirpation, he noticed an accumulation of pigment in the blood, and from these facts concluded that the suprarenal bodies are organs whose function it is to separate and to destroy pigment. But all other authors who have repeated these experiments on many different kinds of animals, contradict those statements. Gratiolet,‡ Philip-

* Martini, "Comptes rendus," 1856," Tome xliii., p. 1052. Kent Spender, "British Med. Journal," 11 Septr., 1858. Stedmann, "Guy's Hosp. Reports," viii., 1863, p. 1.

† "Comptes rendus," 1856, Tome xliii., p. 422 and 904; "Comptes rendus," 1857, Tome xlv., p. 246; and Tome xlv., p. 1036.

‡ "Comptes rendus," 1856, T. xliii., p. 468.

peaux*, Berruti and Perusino†, Harley,‡ Chatelain,§ Schiff,|| &c., have shown that if death occur soon after the extirpation it is merely the result of the severity of the operation, because, under favourable circumstances, they have kept alive many animals, both those possessing pigmented tissues and others that were albinos, weeks and even months after cutting out the suprarenal capsules, while, at the same time, no increase of the pigment of the skin was observed, nor, after death, any anomaly of pigmentation in the internal organs.

Chemical examination of the suprarenal bodies has furnished us with no certain information regarding their normal functions, or the pathogeny of Addison's disease (Vulpian,¶ Virchow,** Arnold††).

Virchow‡‡ has pointed out the resemblance of the colouring matter found in the normal suprarenal capsules to that of the rete Malpighii, but in how far this normal pigmentation is connected with the staining of the skin is still undetermined; on the other hand, little value is to be put on the statement that in negroes the suprarenal capsules are relatively very large (Casson)§§, an observation not confirmed by Cruveilhier.|||| Opposed to these negative results of experimental research, and partly before physiologists had become acquainted with the over-estimated importance of the function of the suprarenal bodies, another theory regarding the origin of Addison's disease had been put forward, according to which it is of a secondary character, *depending on an affection of the nervous system, especially of the great abdominal plexuses of the sympathetic.*

This view evidently originated in observation of the relation subsisting between the nerves of the suprarenal capsules and the abdominal plexuses of the sympathetic. Thus, the ganglion semilunare sends a considerable number of twigs to the suprarenal bodies, and these form there a close network, which is, as Virchow ¶¶ discovered, richly supplied with

* "Comptes rendus," 1856, T. xliii, p. 964 and 1155; T. xlv., p. 396.

† "Canstatt's Jahresbericht," 1857, iv., p. 265.

‡ "British and Foreign Med. Chir. Review," 1858, vol. xxi., p. 204 and 498.

§ "De la peau bronzée, ou Maladie d'Addison," Thèse, Strassbourg, 1859.

|| "Union Médicale de Paris," 1863, No. 61, p. 346.

¶ "Comptes rendus," 1856, Tome xiii., p. 664; and Tome xlv., 1857, p. 340.

** "Archiv für Path. Anat.," 1857, Bd. xii., p. 481.

†† "Archiv für Path. Anat.," 1866, Bd. xxxi., p. 64.

‡‡ "Die krankhaften Geschwülste," Bd. ii., p. 695.

§§ See Virchow, "Die krankhaften Geschwülste," Bd. ii., p. 695.

|||| See "Schmidt's Jahrbücher der Medicin," Bd. cxxvi., p. 239.

¶¶ "Virchow's Archiv," 1857, Band. xii., p. 483.

ganglia. These anatomical considerations and the changes—which we shall discuss further on—lately found in the abdominal plexuses of the sympathetic in a great number of cases, have tended to strengthen the theory that Addison's disease is intimately connected with structural change in the sympathetic. The great majority of authors, including, most recently, Headlam Greenhow,* are inclined to this belief. We have not, however, any very good *physiological* reason for this, for we can just as seldom produce the symptoms of Addison's disease by extirpating the abdominal plexuses of the sympathetic as by excising the suprarenal capsules. The results of a number of these experiments are given in the physiological part of this essay.

While experimental physiology thus seems rather opposed to the theory that this disease is dependent on an affection of the abdominal sympathetic, pathological anatomy has comparatively lately furnished us with certain observations which point with some show of probability to this conclusion. The number of cases in which morbid changes have been found in the sympathetic is not small; in many of these, however, the examination appears to have been incomplete, and, with respect to some, it may be questioned whether the structural alterations observed possess any real pathological value, and even when they can claim such value, whether they should be regarded as primary, or only as secondary affections. Such as they are, we now proceed to quote these cases in detail :—

1. Queckett † found fatty degeneration of the solar plexus in one case.

2. Recorded by Monro.‡—A woman, 40 years of age; both suprarenal capsules degenerated, and adherent to the surrounding parts—the right enlarged to four times its proper size. *The sympathetic nerves from the small splanchnic, and some of the ganglia of the solar plexus, swollen and of a reddish colour (hyperæmic); the left suprarenal body had preserved its normal size and position, and its nerves were less injected.*

3. Recorded by Washington Lovegrove.§—An engineer, 32 years of age.—Autopsy performed by Wilks. Both supra-

* "Lancet," 1875, Vol. i., p. 327, 361, 395, 429, 463, 532.

† The particulars of this case are not given in any of the books or publications to which we have had access.

‡ Monro, "Assoc. Med. Jour.," 1856, p. 848.

§ Washington Lovegrove, "Med. Times and Gaz.," 1858, 17th July.

renal capsules degenerated into albuminous, chalky masses, adherent to the surrounding tissues—the right considerably enlarged. *The semilunar ganglia were healthy, but the branches which they gave to the diseased glands were completely atrophied.*

4. Recorded by F. J. J. Schmidt.*—A servant girl, 16 years of age.

Section, by Dr. Boogard.—The suprarenal capsules slightly enlarged; *the sympathetic in the neighbourhood of the abdominal aorta to a high degree atrophied.*

5. Recorded by van Anandel.†—A woman, 30 years of age.

Section.—Both suprarenal capsules totally changed by tuberculous degeneration. *Microscopic examination revealed the presence of atrophy of the sympathetic, and of the solar plexus, with almost entire disappearance of the medullated cells, and brown pigmentation of the ganglionic cells, in which the nucleus could be distinguished only by means of its nucleolus.*

6. Recorded by Gull.‡—A man, 31 years of age.

Section, by Wilks.—Both suprarenal capsules transformed into large albuminous masses. The surrounding tissues were included in this new formation, so that *the right semilunar ganglion and its nerves were completely embedded in it, whilst the left was free, only its branches being enveloped by and lost in the mass.*

7. Recorded by Habershon.§—A bookbinder, 18 years of age.

Section.—Caseous and calcareous degeneration in both suprarenal capsules, the left enlarged. *The left semilunar ganglion lay close to the left suprarenal capsule, and several large branches from it were firmly embedded in the solid new formation; microscopic examination, however, showed no change in the ganglion cells.*

8. Recorded by v. Recklinghausen.||—A woman, 40 years of age.

Section.—The normal structure of the suprarenal capsules quite lost, but replaced by a grey tissue well supplied with blood, the products of chronic inflammation which had undergone fatty metamorphosis. *The celiac ganglion was injected, but nothing abnormal was found when it was subjected to ex-*

* F. J. J. Schmidt, "Archiv für die holländischen Beiträge," Bd. ii., p. 166.

† van Anandel, "Nederl. Tijdschr. v. Geneesk," vi., p. 200 (April, 1862).

‡ "Med. Times and Gaz.," 1863, 24 Jany.

§ Habershon, "Lancet," 1864, 5 March, p. 269.

|| v. Recklinghausen, "Deutsche Klinik," 1864, No. 8, p. 78.

amination. *The nerves of the sympathetic, including those passing to the suprarenal capsules, presented nothing abnormal beyond being very full of blood.*

9. Virchow* states that he has observed, in an individual who had suffered from cancer of the œsophagus and bronzed skin, a hyperplastic hæmorrhagic swelling of the suprarenal capsules, *accompanied by thickening of the solar plexus.*

10. Recorded by Headlam Greenhow.†—A man, 32 years of age.

Section.—Both suprarenal capsules enwrapped in thick fibrous tissue—the right considerably enlarged, the left smaller, and consisting of fibrous tissue interspersed with caseous and chalky masses. *The nerves from the semilunar ganglion entering the affected gland were at least twice as large as usual, but showed under the microscope only an increase of the fibrous sheath of the nerve bundles.*

11. Recorded by Meinhardt.‡—A man, 52 years of age.

Section.—Both suprarenal capsules degenerated. The microscopic examination (by Luschka) showed that the medullary part of the gland had the appearance of a tuberculous mass consisting of molecular detritus and globules of fat. *Nerve-tubules and ganglionic cells were completely absent.*

12. Recorded by Bartsch.§—A clerk, 48 years of age.

Section, by Perls.—Both suprarenal capsules the seat of caseous degeneration. *The semilunar ganglia were of normal size, embedded in a quantity of loose fatty connective tissue, greyish-red in colour, and presented a regular surface when cut. Microscopic examination showed the presence of whole ganglionic cells almost completely filled with small brown fatty molecules, only a few cells preserving a distinct nucleus. After treatment with acetic acid, the oblong nuclei in the pale grey fibres of Remak were decidedly fewer than normally, the bulk of the ganglia at most parts consisting of a fibrous connective tissue interspersed with fine, strongly-refracting molecules, and here and there with long narrow nuclei. The proper nerve fibres showed nothing striking, either in external appearance or in their distribution.*

13. Recorded by Sanderson.||—In the case of a woman, the

* Virchow, "Die krankhaften Geschwülste," Bd. ii., p. 697.

† Greenhow, "Path. Transact.," xvii., p. 307.

‡ Meinhardt, "Wiener med. Presse," 1866, No. 1-4 and 7-9.

§ Bartsch, "De Morbo Addisonii," Inaugural Dissertation, Königsberg, 1867.

|| Sanderson, "Med. Times and Gaz.," 1868, Oct. 31.

semilunar ganglia, and the nerves connecting them with the suprarenal capsules, were enclosed in adenoid tissue. This tissue also surrounded and united the suprarenal bodies—which were fatty in structure, though still showing distinct remains of the cortical substance—to the neighbouring organs.

14. Recorded by M. Wolff.*—A merchant's apprentice, 16 years of age.

Section.—Both suprarenal capsules enlarged to three times their natural size, and degenerated; microscopically, not a trace of the normal structure of these organs could be seen. *The nerves of the solar plexus, and the semilunar ganglia with the nerves passing from them to the suprarenal bodies, were surrounded by a firm envelope of connective tissue. On some of the nerves from the solar plexus, before they enter into the corresponding semilunar ganglion, were ampulliform swellings.*

Microscopic examination of the semilunar ganglia showed that the greater number of ganglionic cells were intact and had a distinct nucleus, only a few of them containing some fatty molecules. In the nucleated fibres of Remak in the ganglia themselves nothing abnormal was observed. *The increase in the amount of connective tissue, however, in the ganglia was very striking.* This tissue was fibrous, and here and there provided with spindle-shaped cells.—The ampulliform swellings, situated on some of the nerves of the solar plexus, just before entering into the corresponding semilunar ganglia, were seen, on microscopic examination, to be small ganglia containing ganglionic cells. In these, as in the large semilunar ganglia, the hyperplasia of connective tissue between the ganglionic cells was well marked. Examination of individual nerves of the solar plexus demonstrated no other irregularity in the nerves themselves, but the already mentioned thickening of the neurilema which, in cross section, showed itself by numerous processes passing in between the nerve bundles. *The principal element of the process going on in the ganglia and nerves was thus found to be development of connective tissue, but of such a nature that it did not produce atrophy either in the ganglionic cells or in the nerve filaments.*

15. Recorded by Kuhlmann.†—A man, 33 years of age.

Section, by Rindfleisch.—The suprarenal capsules shrunken and full of tuberculous material. In the adhesions of the

* M. Wolff, "Berliner klinische Wochenschrift," 1869, Bd. 17, 18.

† Kuhlmann, "Berliner klin. Wochenschrift," 1869, No. 45.

capsules were found, on microscopic examination, two large *nerve trunks*, the fibres of which had become the seat of *fatty degeneration*.

16. Recorded by A. Fränkel.*—A man, 30 years of age.

Section.—Right suprarenal body almost double its normal size, degenerated, and containing some thick pus; the left rough, and of the size of a walnut, of the same structure. *On this (the left) side the suppurative softening involved the outer part of the solar plexus, and formed in it an abscess of the size of a cherry.* No microscopic examination was made.

17. Recorded by Burresi.†—A man, 43 years of age.

Section.—Degeneration of both suprarenal capsules. *The semilunar ganglia considerably enlarged, especially the left; the nerve trunks forming the solar plexus thickened; the ganglionic cells (under the microscope), especially on the left side, more granular and indistinct than usual, without a trace of a nucleus; the neurilema hypertrophied.* Further examination showed that *the whole sympathetic nervous system was injected and swollen, that both upper cervical ganglia, especially the left, were increased in size, more cylindrical than normal, and prolonged and tapering in a downward direction; that the neurilema was hypertrophied, and that the enclosed medullary substance was less in quantity.* Microscopic examination revealed the presence of both old and recent effusions of blood in the ganglia and nerve trunks.

18. Recorded by Southey.‡—A woman, 30 years of age.

Section.—The capsules of the suprarenal bodies transformed into a caseous mass. *The semilunar ganglia similarly affected.*

19. Recorded by H. M. Tuckwell.§—A woman, 31 years of age.

Section.—The suprarenal bodies degenerated; the left united to the liver by a mass of connective tissue. *The nerves entering the suprarenal plexus, the semilunar ganglion, and the great splanchnic nerve, were enveloped in the above-mentioned mass of connective tissue.*

20. Recorded by Trübiger.||—An apprentice, 17 years of age.

* A. Frankel, "Ein Fall von Addison'scher Krankheit," Inaug. Dissert., Berlin, 1870.

† Burresi, "Lo Sperimentale," xxv., 6.) (Anno. xxii., 1870), p. 521.

‡ Southey, Pathological Society of London. Sitting of 19 Decbr., 1871.

§ Tuckwell, "St. Barthol. Hosp. Rep.," vii. (1871), p. 73.

|| Trübiger, "Archiv der Heilkunde," 1874, Bd. xv., p. 417.

Section.—The suprarenal capsules the seat of cheesy degeneration. A *small-celled infiltration* was found in the great ganglia round the left suprarenal body, and in these bodies themselves. *The ganglionic cells were unchanged.*

We will now quote some other cases, in which *no change was found in the sympathetic.*

1. Recorded by Martineau.*

Section.—Both the suprarenal capsules enlarged, and adherent to the surrounding tissues. *The nerves of the coeliac plexus, and the ganglia of the solar plexus, were examined most carefully, and showed no change.*

2. Recorded by Child.†—A woman, 37 years of age.

Section, by Tuckwell.—Both suprarenal bodies enlarged, and infiltrated with tubercles. *No lesion in the nerves supplying the suprarenal glands.*

3. Recorded by D. Williams.‡—A woman, 46 years of age.

Section.—The suprarenal bodies considerably enlarged and degenerated. *The sympathetic nerves of the small splanchnic and the ganglia of the solar plexus were normal.*

4. Recorded by Chatin.§—A man, 46 years of age.

Section.—Both suprarenal capsules the seat of tubercular degeneration. *In the semilunar ganglia no fatty metamorphosis could be detected.*

5. Recorded by van den Corput.||—A woman, 30 years of age.

Section.—The left suprarenal body tuberculous, the right entirely atrophied, *the nerves of the plexuses apparently normal.*

6. Recorded by Heslop.¶—A man, 21 years of age.

Section.—Both suprarenal capsules the seat of cheesy degeneration. *No change in the sympathetic nerves and ganglia.*

7. Recorded by Schüppel.**—A farm servant, 34 years of age.

Section.—*The sympathetic was perfectly normal.*

* Martineau, "De la Maladie d'Addison," Paris, 1864.

† Child, "Lancet," 18 Feby., 1865, p. 176.

‡ Williams, "Brit. Med. Journal," 9th February, 1867.

§ Chatin, "Gaz. méd de Lyon," 1867, p. 257.

|| Van den Corput, "Journ. de Bruxelles," xvii., p. 573. Dsch, 1868.

¶ Heslop, "Lancet," 1870, No. 23.

** Schüppel, "Archiv der Heilkunde," 1870, xi., p. 87.

8. Recorded by Rossbach.*—A woman, 62 years of age, who had suffered from Addison's disease, complicated with scleroderma.

Section.—Both suprarenal capsules normal. *No changes* were observable in the thoracic or abdominal parts of the *sympathetic*, or in the solar plexus.

9. Recorded by H. Wolff.†—A man, 50 years of age.

Section.—Suprarenal bodies normal; *nothing abnormal in the sympathetic*.

10. Recorded by Krause.‡—A man, 20 years of age.

Section.—*Semilunar ganglia normal*.

11. Recorded by Eppinger.§—A woman, 40 years of age.

Section.—*No change in the ganglionic cells of the abdominal ganglia of the sympathetic*.

12. Recorded by Pye Smith.||

Section.—Both suprarenal capsules degenerated; the *ganglia and the solar plexus*, however, *unaffected*.

Thus the results of examination of the sympathetic still remain antagonistic to each other, at one time negative, at another positive. But even should the positive evidences accumulate in the future, or if it be shown that the changes in the plexuses of the sympathetic are primary, and those in the suprarenal capsules secondary phenomena, the question would still be *how* the symptoms of Addison's disease are caused by such changes—a question towards the solution of which we have not advanced one step.

X.—DIABETES MELLITUS.

In the physiological part of this essay mention is made of the well-known facts that in animals diabetes mellitus may be produced by wounding the fourth ventricle of the brain, by making incisions in the spinal marrow at various parts from the medulla oblongata downwards to the level of the lumbar vertebræ, and by injuring the cervical and upper thoracic ganglia of the sympathetic. It was further stated

* Rossbach, Virchow's "Archiv," 1870, Bd. l., p. 566, and Bd. li., p. 100.

† H. Wolff, "Ein Fall von Broncekrankheit," Inaug. Dissert., Berlin, 1872, p. 25.

‡ Krause, "Sitzungsberichte des Vereins der Aerzte in Steiermark," ix., p. 22 (1871-72).

§ Eppinger, "Böhmisches ärztliches Correspondenzblatt," 1875, No. 29, p. 259.

|| Pye Smith, Virchow's "Archiv," 1875, 65th Band., p. 502.

in detail that all these experimental procedures were followed by injury (paralysis) of the vaso-motor nerves of the liver, which rise in the neighbourhood of the arch of the fourth ventricle of the brain, traverse the cervical and dorsal parts of the spinal marrow to the fourth or fifth dorsal vertebra, join the sympathetic through the rami communicantes, pass downwards towards the liver, and eventually enter it as the hepatic plexus.

Injury to these vaso-motor nerves, no matter at what part of their course, produces a paralytic dilatation of the vessels of the liver; this causes an increased flow of blood, and thus an augmentation in the quantity of sugar is formed, which then enters the circulation, and finally the urine. As we have formerly gone over these details, we have here only to answer the question whether diabetes in man is in any way dependent on disease of the sympathetic nervous system.

This is undoubtedly the case in those forms of the disease which are analogous to diabetes in animals after injury to the central parts of the nervous system. To this category belongs diabetes from injury or disease of the brain involving the fourth ventricle and the parts near it, of which class of cases there are many recorded examples. Probably, also, many forms of *toxic* diabetes (as by carbonic acid poisoning), and the rare forms of intermittent diabetes (the analogues of other intermittent neuroses) may be due to some affection of the vaso-motor nerves.

A considerable quantity of sugar has lately been found in the human urine (Braun *) in certain cases of neuralgia of the sciatic nerve; this condition seems to resemble those cases in animals in which diabetes followed division of the sciatic nerve. In one case of inveterate sciatica of the right side we occasionally found sugar to the extent of about one per cent., the quantity of urine passed daily being 3,000 ccm., and the specific gravity 1023. The sugar disappeared when the sciatica was cured, the specific gravity sinking to 1008.

While discussing hyperidrosis unilaterialis we mentioned that in three recorded cases of diabetes there were signs of disordered function in the sympathetic, usually increased perspiration on one side; in one case there was also contraction of the pupil. Till we have further observations on this point it must remain undecided whether there is any pathological connection between hyperidrosis and diabetes.

* Braun, "Lehrbuch der Balneotherapie" (Berlin, 1868), p. 343.

We possess no pathological facts that would warrant the assumption that the sympathetic takes part in causing other varieties of diabetes. Nevertheless, we would mention that in a case of this disease, complicated with atrophy of the pancreas, Klebs and Ph. Munk* found the semilunar ganglia atrophied, whilst the hepatic nerves running along with the hepatic artery remained perfectly unaffected. Whether the atrophy of the solar ganglion has any relation to the atrophy of the pancreas or to the diabetes is unknown. The same authors noticed also that in dogs, after partial extirpation of the solar ganglion, diabetes appeared and partly passed off again, traces of it being still present, however, till death occurred (1-2 weeks). At the *post-mortem* examination of the last case it was noticed that the nerve elements were degenerated.

XI.—HYPERÆSTHESIAS OF THE SYMPATHETIC SYSTEM.

1.—*Hyperæsthesia of the Mesenteric Plexus.*

(Enteralgia, Enterodynia, Colic.)

Those affections of the intestinal canal and the parts connected with it, usually known as Enteralgia or Colic, which Willis † seems to have been the first to consider of a neuralgic nature, have been for some time regarded by most authors as neuroses of the sympathetic; and as their seat has been placed in the mesenteric plexus, they have been described as Hyperæsthesia plexus mesenterici or neuralgia mesenterica (mesaraica). This refers both to the ordinary colic (also known as rheumatic, hysterical, &c.), and also to that well-marked form called Colica Saturnina (colica pictonum of the older writers), which is etiologically and clinically almost typical; it includes also some endemic forms of colic, apparently almost identical with lead colic (colic of Poitou, Madrid, Devonshire, Cayenne, “colique végétale,” &c.).

De Haen and Vanstrostwyk ascribe lead colic to a diseased condition of the abdominal ganglionic system. The same view is taken by Andral, Grisolle, and Ranque, who further hold that the spinal marrow as well as the sympathetic is concerned in the process. On the other hand, Astruc and Sauvages believe that it rises purely from some spinal cause,

* “Tageblatt der Naturforscher-Versammlung zu Innsbruck,” 1869, p. 113.

† Willis, “Op. omn.,” ed. Genev., T. ii., p. 323.

while different authors have absolutely denied its neurotic nature, and traced it to other local anatomical changes in the intestinal canal or in the abdominal coverings.

Tanquerel des Planches, who has had unusual opportunities of studying saturnine diseases, states most decidedly that the seat of lead colic must be sought exclusively in the *sympathetic system*. Tanquerel appealed to the belief most common amongst the physiologists and pathologists of his time, Bichat, Brachet, Andral, Jolly, &c., that the sympathetic system constituted the *motor and sensory centre* for the vegetative organs of the body.* “Should it ever be discovered—which is very improbable—that nerve fibres from any other part than the ganglionic nervous system supply motor and sensory power to the abdominal organs, in them we may expect to find the cause of colic; but till such a discovery is made we can recognise no other seat for this affection.”

From this standpoint—which was quite a just one considering the state of knowledge regarding physiological function at that time—Tanquerel also disputed the theory adopted by Andral and others, that the spinal cord had also something to do with it; the latter, according to him, takes part in producing colic only when it is accompanied by paralysis and arthralgia saturnina. “Colic has its seat in the sympathetic, and nowhere else.”

Amongst the reports of 49 autopsies, recorded by Tanquerel, there is one which possesses for us a special interest, because in it are mentioned considerable changes in the sympathetic. We will quote it in Tanquerel’s own words.† :—

“In the body of case 25 the ganglia of the sympathetic in the abdominal cavity were twice, some of them three times, their normal size, as calculated by comparison with the ganglia in two other cases. These ganglia were externally and internally of a yellowish-grey colour, but were not perceptibly indurated. Nothing of special importance was found in the plexuses. The ganglia of the thorax and neck appeared relatively not to have become so large as those in

* Tanquerel des Planches, “*Traité des maladies de plomb ou saturnines*.” Paris, 1839. The following quotation is from a German translation, published by Frankenberger in 1842, p. 208. Tanquerel holds that the seat of lead colic is not exclusively in the mesenteric plexus, but according as certain plexuses are specially involved the colic appears as epigastric, umbilical, hypogastric, renal, originating in the celiac, mesenteric, hypogastric, or renal plexus.

† L. c., p. 200.

the abdomen. The other nervous ganglia showed nothing further which might distinguish them from those of the two other individuals with whom comparison was made."

In all the other cases the report concerning the sympathetic was negative. Andral,* Gendrin and others, could discover no alteration of the normal structure in this or in the other parts of the nervous apparatus. Tanquerel feels himself forced to regard the changes found in case 25, not as anatomical causes, but as results of the colic.† The other local changes found in lead colic are both inconstant in occurrence and unimportant,‡ and, moreover, their pathogenetic significance is limited by the circumstance that in those cases in which *post-mortem* examination has been made death was not, as a rule, caused by the lead colic, but by some complication. We have no further record of disease in the sympathetic or any other parts of the nervous system in lead colic, with the exception of one case described by Kussmaul and Maier.§ It occurred in the person of a painter, who had long suffered from chronic lead poisoning, and who died suddenly in an attack of colic. Besides chronic catarrh of the whole intestinal tract, there was fatty degeneration and wasting of the pancreas, and slight fatty infiltration of the stomach, especially towards the pyloric end; in the jejunum, ileum, and upper part of the colon there was atrophy of the mucous membrane, both of the stroma and of the glands and villi. There was increased development of the sub-mucous coat of the stomach and intestines by hypertrophy of its areolar tissue and thickening of the *adventitia capillaris*, the meshes of this layer being also filled with fat; the muscular coat of the intestine, especially the small intestine, was the seat of adenoid degeneration. *In the sympathetic many of the ganglia, especially the celiac and upper cervical, were indurated, the septa of connective tissue being hypertrophied and hardened.* Kussmaul and Maier believe that the chronic dyspepsia which

* Andral, "Clinique médicale," 3 ed., Tome ii., p. 229.

† Tanquerel, L. c., p. 201.

‡ Amongst his 49 cases Tanquerel found "balling" of the intestines 16 times, apparently accompanied by contraction; hypertrophy of Brunner's glands seven times; slight swelling of Peyer's patches three times; thick layers of exuded mucus on the mucous membrane four times; deep-seated softening five times; a *completely normal state of the canal* 20 times. Other good observers (Andral, Copland, Louis, Stokes, &c.) could find no pathological changes in the intestine.

§ Kussmaul and Maier, "Deutsches Archiv für klinische Medicin," 1872, ix., p. 283.

exists during life, the anæmic pallor, the deficient nutrition, and perhaps, also, the habitual constipation (atony of the intestinal muscles and diminished secretion from the intestinal glands), are dependent on the above-mentioned pathological phenomena. They, however, regard the theory concerning the influence of the sympathetic in bringing about lead colic as wanting further confirmation.

As regards the other forms of neuralgia mesenterica, we possess no important pathological anatomical facts, with the exception of one case of endemic colic observed by Dr. Ségond, in Cayenne, in which some ganglia and nerves of the sympathetic appeared to be hypertrophied, harder than usual, and of an abnormal colour.*

Under these circumstances we must confine ourselves entirely to the results of clinical observation, and it is questionable whether we are thus provided with very strong evidence of the sympathetic origin of colic. At the present day we need not discuss the doctrine, believed in by Tanquerel des Planches and many other physiologists and pathologists of his time, that the sensory and motor centre for the intestinal viscera is to be found only in the ganglia of the sympathetic. We know, on the contrary, that the sensorium commune in men is exclusively cerebral—*i.e.*, that sensory impressions are felt only in the brain, and that also the movements of the vegetative organs are in various ways controlled and modified by the cerebro-spinal nervous centres, as has been proved by numberless experiments and pathological observations relative to the stomach, intestines, ureters, bladder, uterus, vasa deferentia, &c. Such a statement as Tanquerel des Planches' would now be an anachronism. If we keep in view the neuralgic nature of the group of symptoms known as enteralgia or colic, the only important subject for investigation is *concerning the peripheral course* of the irritating action; whether—to express it more clearly—this is conveyed to the sensory centre by *sympathetic* or exclusively by *cerebro-spinal* afferent fibres. In the first case the sympathetic would have to be regarded as entirely a sensory nerve, the analogue of the sciatic nerve in sciatica, or of the trigeminus in prosopalgia.

Romberg, who describes the “hyperæsthesias of the sympathetic nerve” as a separate division of the second form of neuralgia (“hyperaesthesia from irritation of the central appa-

* Ségond, “Essai sur la neuralgie du grand sympathique, maladie connue sous les noms de colique végétale, de Poitou,” &c. Paris, 1837.

ratus”), and includes under that designation not only *coeliac*, *mesenteric*, *hypogastric*, *spermatic*, and *uterine neuralgia*, but also *cardiac neuralgia* (*angina pectoris* *), writes in the following way of the general characteristics belonging to this group of diseases †:—

“The hyperæsthesias of the sympathetic nerve are distinguished by certain peculiar features, which depend on the physiological function of that portion of the nervous system; first, the exciting of reflex action in the muscles, both voluntary and automatic. The impressions made on the sensory fibres of the sympathetic in health rarely reach our consciousness, but at once bring about reflex actions. In the hyperæsthesias, however, conduction takes place in both directions, and so not only perception of the sensation follows, but also contraction of the muscular fibres, whether in the heart, intestinal canal, excretory ducts of the glands, or in the walls of the abdomen, &c. Next to reflex action, the nervous energy that governs nutrition is more affected than in the hyperæsthesias of the cerebro-spinal nerves. The so-called vegetative processes (secretion, and even the circulation) are disturbed.”

If we apply these general expressions to the affection specially under consideration, we observe in colic (both in the ordinary and in the saturnine forms) a number of abnormal motor phenomena, which have been understood to be dependent on reflex action. These are the partial, spastic contractions of the intestine, which in some cases, especially of lead colic, are not only subjective sensations, but may be felt by the hand, and which have their seat chiefly in the lower part of the canal, the *cæcum* and colon; the spasmodic contraction of the *sphincter ani* also, so often observed by Tanquerel, has been regarded as of this nature. Other concomitant symptoms of colic (nausea, vomiting, painful micturition, dragging upward of the testicle, &c.), have been similarly explained as reflex actions connected with the stomach, urinary organs, *cremasters*, &c.; more particularly the tension and stiffness of the abdominal walls during the attack have been thought to be of reflex origin.

This theory, however, is clearly founded on the error that

* Romberg, “*Lehrbuch der Nervenkrankheiten*,” 2te Aufl., 1851, Bd. i., p. 14, p. 141-170.

† *Ibidem*, p. 142.

in colic we have to do with a genuine neurose of a sensory nerve, that the essential element in it is disturbance of sensation, and that the motor phenomena are merely accidental or secondarily dependent on it. Such a doctrine is as untenable in this disease as in angina pectoris or hemicrania. When we, in the ordinary but inaccurate classification of nervous diseases, include colic among the neuroses or hyperæsthesias, we act in conformity with the maxim, "*A potiori fit denominato*," inasmuch as we give most prominence to the symptom which is subjectively the most urgent, or practically the most important—the pain. *In fact, however, colic is just as little a hyperæsthesia of the mesenteric plexus as angina pectoris is of the cardiac plexus; it is rather a compound sensor-motor neurose, i.e., the same morbid actions which cause the irritation may at the same time produce the anomalies of motion through the motor nervous apparatus and muscular fibres.* This is most obviously the case in lead colic. From many experiments on animals, and from the results of chemical research in men (conducted by Tanquerel des Planches, Meurer, Devergie, Orfila, Chevallier, Chatin) we know that the lead is deposited most abundantly in the muscular system; we know, further, that it acts locally in a high degree as a stimulus to contraction in the unstriated muscles, either directly or through the medium of the intramuscular nerve-terminations; and to this are, for the most part, due the well-known astringent, styptic, and hæmostatic properties of the preparations of lead. Thus, nothing is more probable than that the lead deposited in the walls of the intestines stimulates the unstriated muscular fibres to contract, and so gives rise to the partial spasmodic constrictions of the intestinal tube. This may be the case in the smooth muscular fibres of the œsophagus, stomach, ureters, bladder, urethra, cremasters, &c. As regards the theory that the hardness and tension of the walls of the abdomen arise from reflex contraction of the abdominal muscles, it may be stated that it has no physiological warrant; at least we are not aware that any one has ever succeeded in producing reflex contractions of the abdominal muscles through the sensory visceral nerves. Moreover, these symptoms are neither constant in occurrence nor proportionate to the intensity of the pain; they may, as Romberg justly observes, be quite absent when the pain is very acute, a circumstance which seems to us to tell against the assumption of any reflex connection between the symptoms. We leave it an open question

whether the tension of the abdominal coverings in lead colic is perhaps the result of a direct excito-motor action of the lead, the possibility of which, even when voluntary muscles are involved, being unquestionable, or whether it should be reckoned a consensual movement of co-ordination, occasioned by the painful contraction of the lower part of the intestine. We would only protest against the readiness with which the term "reflex action" is used, without any just cause or physiological reason, as a handy explanation of any phenomenon in the domain of the sympathetic.

There is another train of symptoms which appears to us to be of greater importance and less doubtful significance, and to point to *a generally disordered state of the circulation*, and especially to *a diminution in the force of the heart's action* during the colicky seizure; these are retardation of the circulation of the blood, paleness and coldness of the face and extremities, smallness and tension of the pulse, diminution in the number of the heart's contractions, the latter symptom being present in most cases, and frequently to a remarkable degree. These phenomena may almost with certainty be explained as of a reflex nature, and dependent on irritation of the sensory nerves of the abdomen. *The influence in operation here, then, is reflex, the action of the heart being inhibited, by irritation of the medullary centre of the vagus*, as in Goltz's percussion experiment, and its later modifications. By means of these experiments (which have already been mentioned in the physiological part of this work) not only the disturbances of the circulation accompanying the visceral neuralgias have been in the most satisfactory way explained, but important evidence was adduced in support of the theory that these neuralgias have their origin in the sympathetic.

Besides the indications quoted above, Romberg brings forward another symptom as characteristic of the hyperæsthesias of the sympathetic, and to it we must, in a few words, refer. This is the subjective sensation of faintness and weakness, the sense of impending death, felt by the patient while the attack lasts, and which is observable in the sunken, anxious expression on the face, the compressed lips, the twitching of the nose, &c. We have already noticed this great subjective anxiety, which appears quite disproportionate to the severity of the objective phenomena in paroxysms of angina pectoris, and have explained it and the præcordial pain as being due to neuralgic irritation of the sensory fibres of the cardiac

nerves. Regarding colic and similar forms of visceral neuralgia, which have been described as hyperæsthesias of the solar plexus, coeliac neuralgia, &c., we would express ourselves in the same way, considering this symptom a neuralgic, radiative phenomenon, and not the reflex consequence of the embarrassed action of the heart. In this case as in the former, the latter theory is opposed by the fact that obstructions of the circulation of a much more severe nature than ever occur in attacks of colic are frequently met with without any corresponding feeling of oppression; and this sensation may be present without any objective symptoms of disturbance of the circulation (paleness of the skin and a small and slow pulse) accompanying the attack. We ourselves have observed this sense of oppression in great severity in persons whose face and extremities remained red during the seizure, whose heart continued acting powerfully, and in whose pulse there was no diminution in volume.

There still remains for discussion the question, usually quite ignored, regarding the route by which the painful impressions are conveyed to the sensory centre. We reject the theory of transference of impressions, "*Querleitung*," defended by Küttner (on pathological grounds) and by Volkmann; we feel inclined rather to accept it as a necessary postulate, confirmed by anatomical facts, that there is a continuous connection through the ramicommunicantes, between afferent sympathetic fibres and filaments in the posterior roots and posterior columns. Under this presupposition we think it not improbable that, at least for the most part, the painful enteralgic sensations reach the sensorium through the splanchnic nerves.

As we mentioned in the physiological section of this paper, Ludwig and Haffter, and Nasse, in their experiments on animals, found the splanchnic nerves to a high degree sensitive to painful impressions. Another symptom is perhaps of weight as showing that the splanchnic may be involved in this disease, namely, the extreme constipation that almost always attends colic, especially lead colic. This cannot be explained either by the inconstant and transitory spasmodic action or by paralysis (Mérat) of parts of the intestine. It is more probably to be traced to increased action of those filaments of the splanchnic which, when irritated, arrest the peristaltic movements of the small intestine.

Besides the sensory nerves of the intestines distributed in the splanchnic, perhaps *sensory fibres* from the plexuses

surrounding the abdominal arteries may be involved in the enteralgic attack. We are here reminded of Colin's experiments; he showed that the arteries of the abdominal viscera were possessed of great sensibility, in which the arteries of other parts were wanting.

Against our theory concerning the share borne by the splanchnic, it may be said that v. Bezold could not, by irritating the splanchnic nerves in mammalia, succeed in producing the same effects (arrest of the heart's movements by reflex action) that followed irritation of the mesenteric fibres in frogs. The negative result of these experiments allows only one conclusion to be drawn, that besides the splanchnic nerves other afferent trunks transmitting reflex influences may participate in the pathological irritation causing the attack of colic—perhaps the nerves which accompany the mesenteric artery.

II.—*Hyperæsthesia of the Solar Plexus.*

Neuralgia Cæliaca.

Under the above name Autenrieth and Romberg included certain phenomena which, in their opinion, closely resemble the vagus-neuralgias of the stomach (gastrodynia neuralgica), but which proceed, not from the vagus, but from the solar plexus of the sympathetic. For the details of symptoms we must refer to Romberg's masterly description of this disease; we would only mention that the pain, as in gastric neuralgia, is felt chiefly in the epigastrium, radiating towards the back or the chest.

Romberg believes the cardialgia accompanying intermittent fever, described by Borsieri,* to be of this nature.

With regard to diagnosis, Romberg remarks, "The feeling of weakness accompanying the pain, the sensation of impending dissolution, which is distinctly observable in the circulation and general aspect of the patient, appears to me to be the symptom which is pathognomonic of coeliac neuralgia, and which defines it clearly from neuralgia of the vagus." We have already fully discussed the sensation of oppression supposed to be characteristic of the sympathetic neuralgias, and its relation to the disturbances of the circulation which frequently accompany it; we can here refer only to what has already been stated. The uncertainty in

* Borsieri, "Instit. med. pract.," vol. i., p. 235.

Romberg's distinction has been especially noticed by Henoeh,* who affirms that the two affections, clinically and therapeutically, are almost identical. v. Bamberger also holds that Romberg's description of cœliac neuralgia is simply an account of the symptoms of an acute cardialgic attack, and, moreover, he has not been able to find any anatomical indication of structural change in the cœliac plexus. Volz, who has met with nineteen cases of this form of disease, found nothing abnormal on post-mortem examination of one of these cases except cancer of the pancreas.†

Wittmaack‡ opposes Henoeh, and is in favour of Romberg's distinction; in addition to the specific feeling of faintness he instances several other diagnostic symptoms which, however, seem to us to be of no great importance, namely, that cœliac neuralgia does not usually occur in young persons, that it is found more seldom in connection with sexual disorders (irregularities in menstruation) and lasts a shorter time than gastrodynia neuralgica. Even if we admit all these considerations, they do not prove that we have to do with an affection of the sympathetic, and especially of the solar plexus.

There are no available pathological anatomical facts, and no adequate physiological grounds, to enable us to make a proper estimate of the nature of this neurose. Anatomy and physiological experiment certainly show that twigs from the solar plexus take part in the innervation of the stomach, but in no way prove that sensory nerves, having a reflex action on the stomach, come from the same source.

III.—*Hyperæsthesia of the Hypogastric Plexus.*

This form of sympathetic neuralgia, first noticed by Romberg, is characterised, according to him, by painful sensations in the lower abdominal and sacral regions, radiating to the upper part of the thigh and the parts supplied by the spinal hæmorrhoidal nerves. It is most common in the female sex, with hysteria or irregularities of menstruation, occurring often at the commencement of puberty. Of this nature are many of those symptoms to which the public and some

* Henoeh, "Klinik der Unterleibskrankheiten," Berlin, 1854, Bd. ii., p. 184-186.

† v. Bamberger, "Krankheiten des chylopoëtischen Systems," Erlangen, 1855. Virchow's "Spec. Path. und Ther.," Bd. vi., 1te Abtheilung, p. 168.

‡ Wittmaack, "Pathologie und Therapie der Sensibilitätsneurosen." Leipzig, 1861, p. 242.

physicians apply the vague terms *menstrual colic* and, in men, *hæmorrhoidal colic*.

Romberg supposes the sympathetic nature of this complaint to be indicated by "disorders of the circulation and secretion in the organs affected," which he looks upon as *consequences* of the hyperæsthesia of the hypogastric plexus. It is, nevertheless, questionable whether the local disorders of circulation and secretion (especially those of menstruation) do not frequently precede the neuralgic phenomena, and stand rather in a *causal* relation to them. Authors, however, who believe in a "hæmorrhoidal dyscrasia" consider the neuralgia only as a later symptom of that affection. As regards specially the participation of the hypogastric plexus in this neurose we know far too little about its functions generally, and of its sensory function in particular, to be able to give a decision on the matter on physiological grounds.

IV.—*Hyperæsthesia of the Spermatic Plexus.*

Neuralgia Spermatica.

In this category Romberg includes those affections of the male sex which Sir Astley Cooper has described as "*irritable testis*," others as "*neuralgia testis*" or "*neuralgia spermatica*." Valleix* holds that it is identical with the "*neuralgia ileoscrotalis*" described by Chaussier,† and places its seat in the region of the cerebrospinal nerve trunks of the lumbar plexus. Leubuscher‡ also seems inclined to this belief; while Hasse,§ like Romberg, locates the affection in the spermatic plexus, and affirms that it is due to dilatation of the veins, with or without varicocele, in the tissue of the testicle. Cahen is of opinion that the disease in question is a primary genitocrural neuralgia, to which is frequently added, as in the other neuralgias, an affection of the vasomotor nerves. This he infers from the swelling and dilatation of the vessels of the testicle which, according to him, are not causal but secondary.

* Valleix, "Observations on the Structure and diseases of the Testis." London, 1830, p. 49.

† Chaussier, "Table Synoptique de la Neuralgie suivant la Nomenclature Méthod. de l'Anat." 1803.—Valleix, "Traité des Neuralgies ou Affections doul. des Nerfs." Paris, 1841.—See also Neucourt, "Archiv Gen.," July and August, 1858.

‡ Leubuscher, "Krankheiten des Nervensystems," Lpz. 1860, p. 83.

§ Hasse: "Krankheiten der Nervensystems" (Virchows "spec. Path. and Th.," Band IV., Abthl. 1), 2te. Aufl; Erlangen, 1868, p. 82.

In connection with neuralgia testis we may mention some other neuroses of the genital organs, as rising probably from the same or a neighbouring part of the nervous system. Amongst these are *neuralgia of the urethra*, met with only in men; the *sensation of sexual pleasure exaggerated till it becomes a hyperæsthesia*, occurring most commonly among women, rarely among men, and the disease described by Gooch* as *irritable uterus*, and by others as uterine neuralgia. Cahen,† with regard to the latter, thinks that there is an immediate connection between the neuralgia and other functional disorders of the female genital organs considered by him vasomotor phenomena. According to him we have to do with a primary ileo-lumbar neuralgia, to which is added a vasomotor neurose of the uterus (congestion, hæmorrhage), frequently accompanied by abnormal secretion. The reverse relationship, that the ileo-lumbar neuralgia follows the uterine disease, is, in his estimation, not consistent with the order in which the symptoms present themselves.

These authors, in describing such obscure groups of symptoms, have adduced nothing that would warrant us in localising the seat of these affections in any sharply-defined part of the sympathetic system; and physiology and pathological anatomy certainly furnish us with no adequate grounds for so doing.

XII.—ANÆSTHESIAS OF THE SYMPATHETIC SYSTEM.

The anæsthesias of the sympathetic, like the hyperæsthesias, have been erected into a special group of sensory neuroses. In the meantime it is merely an empty framework, waiting to be filled up at some future time. We will in no way dispute the possibility of their existence, but we cannot conceal our impression that every condition necessary for such a nosological arrangement is absent. Physiological experiment and the results of pathological investigation have so far provided us with no such data, and we possess no trustworthy functional tests by means of which we can diagnose diminution of sensibility in the sympathetic; on the organs supplied by the sympathetic there is conferred, under normal circumstances, a very slight, almost imperceptible degree of sensibility, and this entirely in the indefinite

* Gooch, "Account of Some of the most Important Diseases Peculiar to Women." London, 1831, p. 299.

† Cahen, "Des Névroses Vasomotrices." Arch. Gen., 1863, T. ii.

form of the so-called *common sensation*, while muscular sensation and all the special qualities of the sense of touch are denied to the "vegetative" organs of the body. Thence we are asked to infer, improbable as it may appear, that the quantitative diminution of this almost imperceptible common sensation makes itself clearly known to our consciousness, both subjectively and objectively, according to the analogies presented to us by the other anæsthesias! In this difficulty the extensive reflex connections of the sympathetic have been appealed to, and it has been attempted to explain anæsthesia of the sympathetic as due to the arrest or diminution of regular reflex action (as in the peristaltic movements of the intestines). But a double objection is here met with. First, with reference to most of the motor phenomena, those of the intestines for example, it is still very problematical whether, under normal conditions, they are really reflex, and not rather produced principally or exclusively by direct automatic stimulation of peripheral ganglionic apparatuses; secondly, it does not necessarily follow from the absence of habitual reflex movements, even when the motor connection is shown to be complete and perfect, that we have to do with an actual anæsthesia, *i.e.*, with a condition in which sensory impressions are enfeebled during transmission through, or are absolutely arrested in, the sensory nerve-trunks. Absence of reflex phenomena may be due to disturbances in the central part of the track in which the reflex influence travels, in those nervous apparatuses (ganglionic cells) in which the afferent sensory stimulus is transformed into a motor impulse; and these central affections may occur notwithstanding the complete integrity of the nervous channels by which the sensory impressions are conveyed. Reflex action may thus be diminished or even arrested both while sensibility is intact and under the opposite conditions; this is sufficiently proved by many cases of *Tabes dorsalis*, and other well-known examples.

XIII.—SYMPATHETIC PARALYSES AND SPASMODIC AFFECTIONS OF VOLUNTARY MUSCLES.—REFLEX PARALYSIS, DIPHTHERITIC PARALYSIS, &c.—TABES DORSALIS (ATAXIE LOCOMOTRICE PROGRESSIVE).—EPILEPSY.

In the preceding parts we have dealt with many motor diseases of a paralytic or spasmodic character, which appear to be the result of the pathologically changed *innervation of unstriped muscular fibres* on the part of the sympathetic

system. We have seen mydriasis rise from a state of spasm in the sympathetic pupillary fibres, and myosis from paralysis of the same; we have shown how it is probable that the exophthalmos and other symptoms of Basedow's disease are caused by a change in the action of the sympathetic on the unstriated muscles of the orbit; we have discussed, when considering angina pectoris, the dependence of motor anomalies in the heart and blood vessels on the sympathetic nerve; and, finally, we have repeatedly pointed to the motor connections of the sympathetic with abdominal organs (the intestinal canal, bladder, genital apparatus, &c.) as the source of the pathological motor disturbances in these organs. We could throw only a few gleams of light on these conditions, and on the circumstances that warranted us in including them in the "pathology of the sympathetic system," because it has not been hitherto possible to fix definitely the course of the motor innervation of the organs in question, to separate sufficiently from each other the relations of this course to some parts of the sympathetic nervous system and to other (cerebro-spinal) nerves, and to make it possible to differentiate clinically between the pathological affections arising therefrom. We know, for instance, that the majority of the direct motor fibres of the bladder proceed from the spinal "centrum genito-spinale superius" and the "centrum inferius" through the sacral nerves, others, however, passing through the sympathetic (hypogastric plexus) to the vesical plexus. How is it, then, possible for us to distinguish diagnostically between a paralysis of the sympathetic and one of the spinal motor nerves of the bladder, and thus to speak of a sympathetic paralysis of the bladder, properly so-called? Such is the case also with regard to the intestines, uterus, &c., as has been formerly remarked when considering the motor innervation of these organs. When Romberg, as in the case of the hyperæsthesias and anæsthesias, made a special group of the paralyses of the muscles supplied by the sympathetic trunks, and included in it paralysis of the nerves of the heart, pharynx, and œsophagus, he was justified in so doing by the earlier views regarding the motor innervation of the parts, and especially by the Bidder-Volkmann theory of the independence of the sympathetic system. Now, however, such an assumption would but imperfectly correspond to the state of physiological knowledge. Though our present information does not enable us to recognise as such the sympathetic paralyses and states of spasm in the smooth

muscular fibres, and practically to distinguish between these and motor neuroses of other nerves, there can be no doubt as to their theoretical title to recognition, in spite of the oft-quoted results of experimental physiology. Even now, notwithstanding the above difficulties, we may with certainty state that destruction of certain parts of the abdominal sympathetic nerve must result in paralysis of the intestine, bladder, female genital apparatus, &c.; that, on the other hand, paresis and paralysis of the abdominal organs may depend on loss of the conducting power and irritability of branches, plexuses, ganglia, and trunks of the sympathetic nerve.

Apart from the neuroses connected with the smooth muscular fibres and the so-called vegetative organs, many experiments have been made with the view of claiming for the sympathetic an important rôle in the production of certain forms of motor disorder in the *striped voluntary muscles*.

We now specially refer to those paralyses occurring in connection with certain affections of the abdominal organs (the intestines, the urinary and sexual apparatuses) which appear to have been known to Willis,* and which were named *Sympathetic Paralysis* by Whytt† and Prochaska,‡ and *Reflex Paralysis* by Romberg.§

The latter at first started the theory, founded on the experiments of Combaire || (who observed paralysis of the hinder extremities of animals after extirpation of the kidneys), that *by decrease or absence of the centripetal conducting power in sympathetic nerve trunks* a genuine paralysis may be brought on in parts supplied by spinal motor nerves. This theory he withdrew in a later edition of his book, as without physiological support.¶ Romberg especially included among the paralyses produced in the above way the

* Willis, in explanation of this, draws attention to the anatomical connection between the sympathetic and the nerves of the extremities. "Nervi enim mesenterii non tantum cum intestinis, stomacho, jecore aliisque visceribus communicant, sed etiam cum lumborum aliarumque partium nervis, et consequenter cum artuum." (De anima brutorum quæ hominis vitalis et sensitiva est; Op. Omn. Genev., 1680.)

† Whytt, "Observations on the nature, causes, and cure of the disorders which are commonly called nervous, hypochondriac, or hysteric, &c." Edinburgh, 1765.

‡ Prochaska, "Institutionum physiologiæ humanæ," vol. i. et. ii. Wien, 1806.

§ Romberg, L. c., p. 165.

|| Combaire, "Dissert. sur l'extirpation des reins." Paris, 1803.

¶ Romberg, "Lehrbuch der Nervenkrankheiten," 3 Aufl., 1855, p. 913.

saturnine and hysterical paralyses. Brown-Séquard,* Graves,† Stanley,‡ Jaccoud,§ Lewisson,|| Leyden,¶ Feinberg,** have given other explanations of the occurrence of reflex paralysis, the discussion of which would be too lengthy for this paper.

We pass over also the doubtful influence of the sympathetic in certain forms of paralysis and spasmodic affections of the eye (*strabismus convergens* from relaxation of the external recti muscles, *exophthalmos* from spasm of the obliqui, &c.), which have already been shortly mentioned in the physiological part of this essay. A detailed account of these also would be out of place, as the theories in question, so far as their bearing is of a pathological character, could claim attention only in virtue of their historical value. The same may be said in general also of the doctrines of Remak, who, as we saw, believed that all the voluntary muscles of the body were under a tonic influence proceeding from the sympathetic, and expressed the opinion that "*besides spinal paralysis and spasm, we may expect to meet with both sympathetic paralysis and sympathetic spasm in the voluntary muscles.*" In these words lie the beginning, and, to a certain extent, the programme, of the important part played by the sympathetic system for a long time in the pathology of the motor neuroses, especially in the galvano-therapeutics of these neuroses. We do not consider it necessary to quote here all the motor disorders which, almost without any physiological ground for so doing, have been gradually brought into connection with the sympathetic, both diagnostically

* Brown-Séquard, "Lectures on the diagnosis and treatment of the principal forms of paralysis of the lower extremities." Philadelphia, 1861, p. 24. His results were negatived by those obtained by Gull; "Guy's Hosp. Rep.," vii., 1861.

† Graves, "Leçons de clinique médicale," traduites par Jaccoud, 2 Ed. Paris, 1863.

‡ Stanley, "On irritation of the spinal cord and its nerves in connection with disease of the kidneys"—"Med. Chir. Transactions," xviii., 1833.

§ Jaccoud, "Les paraplégies et l'ataxie du mouvement." Paris, 1864, p. 353. Jaccoud, following up his "exhaustion" theory, called the reflex paralysis *neuro-paralytic paralysis*.

|| Lewisson, "Über Hemmung der Thatigkeit der motorischen Nervencentra durch Reizung sensibler Nerven." Richert's und du Bois-Reymond's "Archiv," 1869, p. 255-266.

¶ Leyden, "Über Reflexlähmungen," in Volkmann's "Sammlung klinischer Vorträge." Leipzig, 1870, No. 2.

** Feinberg, "Ueber Reflexlähmungen," Berliner klin. Wochenschrift, 1871, No. 44-46.

and electro-therapeutically. We will mention only a few details as examples :—

In a communication on *spasm of the facial muscles*, which contains much that relates to this subject, Remak* mentions, amongst others, certain cases of facial paralysis in which the electric irritability of the muscles and nerve-trunks was completely lost. He then says—"When the constant current is passed through the cervical sympathetic of the affected side, even if only for a short time, we observe the striking phenomenon that the irritability of the muscles on the same side returns, the tension of the muscles of the opposite side relaxes, although the muscles on the paralysed side do not again come under the control of the will, and the irritability of the paralysed nerve-trunk does not increase in the slightest degree. It seems to me that here we have a physiological secret—namely, the greatest probability that the sympathetic exercises a direct or indirect influence over the voluntary muscles—a theory which has already received support from what I have seen in lead colic and progressive muscular atrophy, in which the paralysed and atrophied muscles gain in bulk, irritability, and power to perform their office as soon as the cervical or dorsal part of the sympathetic, on the same or the opposite side, comes under the influence of the current." There is no absolute proof, however, that in these cases the cervical or dorsal part of the sympathetic was acted on by the current, and the effects of the supposed galvanisation of the sympathetic do not correspond with the known physiological powers of that nerve, nor can any functional analogue be found for them.

Remak also mentioned a case of facial spasm which improved under treatment by galvanism, by placing the positive electrode at the level of the fifth cervical transverse process "on the spot where one might expect to find the ganglion medium of the sympathetic nerve." He supposes that there are two possible ways of explaining this fact; the first is "that the cause of the spasm is situated also in that part at which the cure was effected"—*i.e.*, in the ganglion cervicale medium; the second that we have to do with an "indirect, catalytic influence," exercised, in his opinion, through a communicating branch between the ganglion medium and the ganglion thoracicum superius, which accompanies the vertebral artery in the vertebral

* "Berliner klin. Wochenschrift," 1864., No. 21-23.

canal and thus regulates the supply of blood to the base of the brain. Besides this form of spasm indirectly connected with the sympathetic system there are "genuine sympathetic facial convulsions—i.e., on the affected side of the face there is a peculiar variety of paralysis associated with spasmodic movements occurring in connection with unmistakable disease of the cervical parts of the sympathetic." Proof of the existence of this affection is still wanting.

In another place Remak * states concerning *the dependence of diphtheric paralysis on change in the sympathetic*, that he believes that it is caused by an affection of the ganglion cervicale superius, occurring with the diphtheritis. This theory of diphtheritic paralysis enabled him to "overcome all the paralytic phenomena by galvanisation of the ganglia superiora of the cervical sympathetic." He is of opinion that the tumefactions found by Bretonneau, Maingault, Trousseau, &c., in the neighbourhood of the angle of the lower jaw did not proceed from the lymphatic or salivary glands, but were caused by infiltration of the connective tissue, whereby the sympathetic also was affected—a hypothesis which is certainly not impossible, but one the truth of which still remains to be proved.

In another paper, written shortly after the last-mentioned, Remak† characterises as a "*dental neurose of the heart*" a condition in which the prominent symptoms were *trismus* and a *neurose of the heart* (accelerated pulse). In order to determine whether it was in the cervical sympathetic or in the vagus that the neurose originated, the constant galvanic current was tried; and as the passing of the current through a spot situated behind the angle of the lower jaw resulted in a fall in the frequency of the pulse, it was concluded that the ganglion cervicale superius was the part at fault. Remak, therefore, propounds the theory that the peripheral stimulus, when the cerebral activity is unaffected, produces spasm only when at the same time a ganglionic part of the sympathetic partakes in the irritation. In cases also of the convulsions of teething in children, so far as they are not of a meningitic origin, he considers it necessary to pay special heed to the occurrence of "swellings in the course of the cervical sympathetic." In these examples, which belong to the latest years of Remak's labours, are many brilliant and suggestive conceptions; they want, however, a physiological and pathological foundation. We thought it necessary to mention

* Remak, "Berl. klin. Wochenschrift," 1865, No. 13.

† Remak, "Berl. klin. Wochenschrift," 1865, No. 25.

them, as they exercised for a long period a most important influence; even at the present day, especially as regards galvano-therapeutics, they meet with extensive approbation.

We would here shortly discuss the relation stated by many authors to exist between the *sympathetic system* and the group of symptoms known as *Tabes dorsalis*, or *progressive locomotor ataxy*. Duchenne* has stated that in a number of cases of ataxy the cervical sympathetic must be regarded as the starting point of the morbid processes. This he infers from the frequent occurrence of the well-known oculo-pupillary symptoms—contraction of the pupil with increased vascularity and temperature of the eye, sometimes also dilatation of the pupil during the attack of pain, contraction and dilatation by turns without vascularity, or unilateral or bilateral myosis.

Duchenne explains in a somewhat far-fetched way the absence of positive post-mortem evidences in the sympathetic by the existence of degenerative changes in the posterior columns. He supposes that the sympathetic is in the first place *functionally* affected—thence the pupillary phenomena, increase of heat, &c.; that this “functional disturbance” in the sympathetic then exerts a “neuromotor action” on the posterior columns, thus giving rise to the atrophy.† The sudden attacks of pain in the bladder and rectum, and the disorders of the genital functions, which occur in some cases, are regarded by Duchenne as functional disorders originating in the abdominal sympathetic. He leaves quite unanswered the important question why we should not rather consider the pupillary, vasomotor, and urogenital centra situated in the spinal marrow as the points of origin of the functional anomalies connected with atrophy. Carré‡ and Friedreich examined some cases of progressive locomotor ataxy most carefully, and could discover no trace of change in the sympathetic. In one case of grey degeneration of the posterior columns and atrophy of the posterior roots, Westphal§ noticed nothing abnormal in the spinal

* Duchenne, “Recherches cliniques sur l'état pathologique du grand Sympathique dans l'Ataxie Locomotrice Progressive.” *Gaz. Hebdomadaire*, 1864, Nos. 8 and 10.

† Duchenne, “Sitzung der Acad. des Sciences, vom 18 Jan., 1864.

‡ Carré, “Nouvelles Recherches sur l'Ataxie Locomotrice Progressive.” Paris, 1865. “*Gaz. des Hôp.*,” 1865, No. 73.

§ Westphal, “*Virchow's Archiv*,” Band 39, p. 114.

ganglia; and in another* case he found no change in the cervical part of the sympathetic, or the uppermost cervical ganglion, both when examined fresh and after being hardened by treatment with turpentine. Vulpian's† researches had the same decidedly negative result; in very advanced cases of tabes he could demonstrate no pathological alteration, either in the trunk of the sympathetic or in any of its ganglia. However, if one believes in Duchenne's doctrine of "functional disturbance in the sympathetic," pathological anatomical proof of lesion of the sympathetic in tabes would clearly be superfluous. Remak,‡ in these cases, designated by him tabes dorsalis in its strictest sense (as opposed to tabes basalis, cervicalis, &c.), observed also inequalities in the pupils, taking the form of unilateral or bilateral dilatation with imperfect reaction when stimulated by light. He interprets these phenomena by the results of Brown-Séquard's and his own experiments, in which division of the sympathetic trunk below the upper lumbar ganglion, or of the branches of the coeliac plexus (in frogs and mammalia), at once brought about a persistent dilatation of the pupil on the side operated on.

Remak also describes a special form of tabes, *tabes sympathetica* (identical with the so-called hysterical tabes), which occurs almost exclusively in the female sex. From the report§ of one such case, which was also associated with sympathetic paralysis of the face, we quote only the diagnosis:—"Neuroganglitis sympathica progressiva sexualis, with consecutive Ischæmia of the spinal cord;" we were unable to find in it any further specific information or anything characteristic of this form of disease.

The relation of *epilepsy* to the sympathetic system is still very obscure. On the whole the view formerly advanced by us appears lately to have gained ground—that many cases, especially of so-called peripheral epilepsy, are of an angio-neurotic nature, and owe their origin partly to a direct and partly to a reflex irritation of vasomotor nerves.

Benedikt|| states "that the epileptic attack is primarily

* Westphal, "Virchow's Archiv," Band 39, p. 365.

† Vulpian, "Archives de Physiologie Normale et Pathologique," 1869, ii, p. 221.

‡ Remak, "Neue Beiträge zur Lehre von der Tabes." "Berl. klin. Wochenschrift," 1864, No. 41.

§ Remak, *ibidem*, p. 397.

|| Benedikt, "Zur Lehre von der Localisation der Epilepsie." Allgemeine Wiener med. Zeitung, 1870, Nos. 35 and 36.

caused by sudden spasm or relaxation of the vessels, and presents the most complete analogy to neuralgic attacks, only that here the irritation affects chiefly vasomotor nerves, and so leads directly or indirectly to anæmia or hyperæmia of the brain." He also thinks himself justified in assuming that the hippocampus major, indicated by Meynert as the part affected in epilepsy, is a vasomotor centre, irritation of which, whether from the cerebral hemispheres or by reflex influences from the periphery, induces the phenomena of the epileptic seizure.

Nothnagel holds, on the strength of his formerly-cited experiments, that the cervical sympathetic has a certain control over the arteries of the pia mater, contraction of which is accompanied by contraction of the arteries of the brain, which have the same origin; and he therefore believes that the epileptic seizure is the result of the anæmia of the brain consequent on the reflex contraction of its vessels. According to this theory the sympathetic plays a most important part in bringing on the epileptic attack, as most of the vasomotor nerves of the pia mater are included either in the cervical part of the sympathetic or in the ganglion supremum. Other investigators (Schultz, Riegel, Jolly) have not, however, confirmed the experimental grounds on which this doctrine rests.

XIV.—PATHOLOGICAL CHANGES IN THE SYMPATHETIC IN SOME INFECTIOUS AND OTHER DISEASES.

In this short additional note we group together some observations on changes in the sympathetic, to which no reference could be made in the former part of this work. These changes, which have hitherto been but slightly noticed, have been found chiefly in syphilis and other infectious diseases, in anomalies of the general nutrition (dyscrasias), &c.

Petrow* was the first who described the changes in the sympathetic in constitutional syphilis. In twelve cases in which he examined the cervical, thoracic, and solar plexuses, he found distinct alteration of the nerve elements and the interstitial connective tissue. In the first were pigmentary and colloid degeneration; associated with it was an affection of the endothelium surrounding the nerve-cells, characterised by great increase in the size and proliferation

* Petrow, "Die Veränderungen des Sympathischen Nervensystems bei Constitutioneller Syphilis." Virchow's "Archiv," 1873, Bd. 57, p. 121.

of the endothelium cells, and by secondary fatty metamorphosis of the same. The change in the interstitial connective tissue of the sympathetic consisted of hyperplasia, leading to sclerosis and atrophy of the nerve elements.

That these lesions of the sympathetic nervous system are really the result of syphilis is shown—apart from the fact of its occurrence in *all* the twelve cases examined—by their analogy to those pathological forms by which syphilis declares itself in other organs. Among these are especially the above-mentioned hyperplastic processes in the interstitial connective tissue.

Soon afterwards Pio Foà* wrote concerning some changes he had observed in the sympathetic in various diseases. These were found chiefly in the cervical and abdominal ganglia, and consisted sometimes of simple or fibrous atrophy, at other times of hyperæmia, sclerosis, pigmentary and fatty infiltration, amyloid degeneration, accumulation of colourless blood corpuscles, and the presence of micrococci in the blood-vessels of the ganglia. These alterations are well-marked in syphilis, Leukæmia, a high degree of cachexia, Pellagra, Tuberculosis, cardiac disorders, and infectious diseases. With respect to the affections of the heart, we may shortly state that de Giovanni† has lately directed attention to the participation of the sympathetic in organic cardiac diseases. He found in three cases contraction of the pupil, which he regards as the result of a venous stasis in the neighbourhood of the cervical sympathetic, which compresses the pupillary fibres; at the autopsy of one of these patients pathological changes were noticed in the cervical sympathetic.

In conclusion we would mention two reports by Köster‡ on the state of the cervical sympathetic in persons who had died suddenly from sunstroke. In one case, that of a soldier, the ganglion supremum of the right sympathetic was twice the size of the left, and was the seat of hæmorrhagic effusion; microscopically, the nerve-fibres were seen to be separated and disintegrated. There were smaller hæmorrhages in the lower, greater hæmorrhages in the upper, parts of the right sympathetic, while slight effusions of blood were found in and round both vagi and in the sheaths of both phrenic nerves. In the second case, that of a woman 21 years of age, the pathological phenomena were a

* Pio Foà, "Sull' Anatomia del gran Simpatico." Bologna, 1874.

† De Giovanni, "Annali univ. Tebbr," 1875, p. 246.

‡ Köster, "Berliner klinische Wochenschrift," 1875, No. 34.

hæmorrhagic infiltration and enlargement of both ganglia suprema of the cervical sympathetic, while the microscope revealed the same appearances as in the other case; there were also ecchymoses as large as peas in both vagi. In the first case the patient had lived twenty-four hours, having a pulse so rapid that its beats could scarcely be counted; there was, however, no acceleration of the respiration. The sudden death might be accounted for by the effect of some paralysing influence on the vasomotor nervous system.

ERRATA.

- Page 165—Line 2nd from bottom: *for* "des," *read* "der."
 „ 169—Line 5th from bottom: *for* "Nerven Krankheiten," *read* "Nerven-krankheiten."
 „ 169—Line 2nd from bottom: *for* "Experimentelles," *read* "Experimentales."
 „ 171—Line 7th from top: *for* "ä," *read* "à."
 „ 171—Line 4th from bottom: *for* "Psysiologie," *read* "Physiologie."
 „ 185—Line 2nd from bottom: *for* "f," *read* "T."
 „ 186—Line 6th from bottom: *for* "Innervationsmenge," *read* "Inner-
 vationswege."
 „ 188—Line 8th from top, and in subsequent parts of the paper: *for*
 "V. Bezold," *read* "v. Bezold."
 „ 190—Line 2nd from bottom: *for* "1878," *read* "1870."
 „ 197—Line 7th from bottom: *for* "Medecin und Naturwissenschaft," *read*
 "Medecin und Naturwissenschaft."
 „ 198—Line 23rd from top: *for* "F. Rosenthal," *read* "J. Rosenthal."
 „ 202—Line 10th from bottom: *for* "V. Graefe," *read* "v. Graefe."
 „ 205—Line 22nd from top: *for* "evigentes," *read* "erigentes."
 „ 205—Bottom line: *for* "Untersuchungen, Frankfort," *read* "Unter-
 suchungen, Frankfurt."
 „ 206—Bottom line: *for* "vendus," *read* "rendus."
 „ 208—Line 9th from bottom: *after* "Heft," *insert* "2."
 „ 379—Line 20th from top: *for* "choroidea," *read* "choroideæ."
 „ 379—Line 3rd from bottom: *for* "Wienam," *read* "Wien am."
 „ 383—Line 22nd from top, and in subsequent parts of the paper: *for*
 "Bäerwinkel," *read* "Baerwinkel."
 „ 387—Line 12th from bottom: *for* "Séguin," *read* "Seguin."
 „ 388—Line 19th from bottom: *for* "Hermicrania," *read* "Hemicrania."
 „ 389—Top line: *for* "Hyperæsthesiæ," *read* "Hyperæsthesia."
 „ 392—Line 4th from bottom: *for* "on," *read* "ou."
 „ 398—Line 3rd from bottom: *for* "polarne," *read* "polaren."
 „ 330—Top line: *for* "Trommhold," *read* "Frommhold."
 „ 409—Line 3rd from top, and page 422, line 7th from bottom: *for*
 "Friedrich," *read* "Friedreich."
 „ 414—Line 4th from top: *for* "Spielman," *read* "Spielmann."
 „ 414—Line 12th from bottom: *for* "Strasbourg," *read* "Strassbourg."
 „ 414—Line 10th from bottom: *for* "Aertyte in Wein," *read* "Aerzte in
 Wien."
 „ 416—Line 6th from bottom: *for* "a," *read* "ac."
 „ 417—Line 9th from bottom: *for* "comtes," *read* "comptes."
 „ 418—Line 2nd from bottom: *for* "Ophthalmogïe," *read* "Ophthal-
 mologie."

Researches in Idiocy. By Dr. J. MIERZEJEWSKI, Professor in the Medico-Chirurgical Academy of St. Petersburg. Translated by Dr. D. HACK TUKE.*

The study of the anatomy of the brains of idiots is a vast field accessible to research, which may serve to throw light upon some questions of psychiatry, hitherto obscure, but which possess an undeniably practical value. It ought to enable us to comprehend better the questions which relate to hereditary insanity. It is undeniable that the vices of physical conformation of ancestors are transmitted to their descendants, and that this phenomenon is the *point de depart* of pathological varieties.

There are not only physical malformations, but also moral perversions, which are subject to the laws of hereditary transmission. We understand, in short, that moral perversions in the ancestors, accompanying malformations of the brain, are susceptible of being transmitted from one generation to another. We are disposed to admit equally the existence of anomalies of the brain in those individuals who present a predisposition to hereditary insanity. These malformations may remain a long time latent, until particularly favourable conditions allow of the degenerative force being developed. All that is advanced on the probable existence of cerebral anomalies with persons having a hereditary predisposition to insanity, rests generally upon hypotheses and very rational suppositions, but the physical, chemical, and anatomical demonstration is usually wanting. It is then our duty to study well the visible evident anomalies, which immediate observation demonstrates by the aid of modern scientific processes. In a word, the studies pursued on the brains of idiots ought to be the foundation stone, destined to bear the edifice of the science which has for its object to determine the physical signs of hereditary insanity.

(1.) In studying the brains of idiots, attention has specially been directed to their weight, although the weight of the brain cannot furnish sufficient indications for diagnosis, because there are idiots, the weight of whose brains may reach 1,800 grammes, and equal the weight of the brain of an intelligent man. The small weight of the brain can only

* We are indebted to Prof. Mierzejewski for this summary of a paper read by him at the Paris International Congress of Mental Medicine, Aug. 1878.

possess a diagnostic value in certain cases, because the well-formed brain may be reduced in its weight in consequence of different pathological lesions. In this case the normal brain never attains the extreme limit which occurs in the weight of the brains of idiots, and which may descend in adult idiots as low as 220 grammes, and with new-born microcephales to 100 grammes (case of Broca).

(2.) The form and the exterior conformation of the brains of idiots present sometimes a resemblance to those of animals. One brain is flat and oblong, like that of a camel; another resembles the brain of an elephant, in the small development of its frontal and ascending parietal convolutions; a third resembles a dolphin, in the smallness and richness of its convolutions. But this resemblance is deceptive; the arrangement of the convolutions, the size of the pons Varolii and of the medulla oblongata, is quite different from that which obtains in animals, and reveals a completely different type. This is also true of the brains of those idiots, whose cerebellum is not covered by the cerebral hemispheres, of which I have the honour to show you a specimen.

The mechanism of development of this anatomical condition in idiots is quite different from what it is in animals. It is the arrest of development, the atrophy, of the occipital lobes, which causes the uncovered condition of the idiot's cerebellum. It is the insignificant inclination of the pons Varolii during the first period of foetal life, which leads to the same results in animals.

(3.) The convolutions of the brains of idiots are very often arrested in their development, but an important question is, How to understand the arrest of cerebral development? The process of development of the brain comprises different phases; the arrest of development of the brain occurs because the organ, arrived at a certain point of the stage which it ought to pass, stops there, and does not continue to go through all the phases which characterise its formation. Regarded from this point of view, every idiot's brain ought to have its representative in the normal brain in course of development. Scientific literature possesses, undoubtedly, descriptions of the brains of idiots, which, by the external appearance of their convolutions, resemble the foetal brain. Unfortunately, the brains have not been submitted to a histological examination, and it remains to determine whether the arrest of development of the morphological parts of the brain, coincides with an arrest of development in the micro-

scopic structure of the nervous elements. The histological researches which I have made upon an idiot's brain have given me very remarkable results. The convolutions of this brain presented externally in their arrangement the foetal type; their nervous elements were as well-formed as in brains completely organised, but they were not so large as in normal brains. In this case the morphological arrest of the convolutions was accompanied by a perfect development of their histological elements, and the external form was not in accordance with the delicate structure of the tissue. Here there was not, consequently, a true arrest of development (morphologic and histologic), but a deviation from the type of normal development.

Up to the present time I have not met with a single description of the brain of an idiot in which the morphological arrangement of the convolutions, and the microscopic structure of their nervous elements presented the embryo form. The case observed by Harck, and that by myself, are perhaps the only exceptions in this respect. We must regard these exceptions, moreover, with some reserve.

The arrest of morphological development of the brain may include the whole hemispheres, or only exist in certain parts of the brain. All these arrests of development are, so to speak, monstrosities, which belong to the domain of Teratology.

(4.) All the brains of idiots cannot be classed under monstrosities; on the contrary, there are many which are only purely pathological types; that is to say, in such cases there is not a simple arrest of the normal development of the brain, but in consequence of the different pathological processes during uterine life, and the first years of infancy, the tissue of the brain has lost its normal qualities, or is replaced by a tissue which is foreign to it.

We hope that, in time, when the embryology of the brain will be more advanced, and the histological examination of the brains of idiots will be made more frequently, that the conditions of simple arrest of development will admit of explanation by purely pathological circumstances, and that the number of cases belonging to the category of pathological brains will be much increased.

(5.) We ought also to range among idiot brains, those which, by the arrangement of the convolutions, nearly resemble normal brains, while having the convolutions hypertrophied, or the convolutions so small and so rudimentary in their

dimensions, as to resemble the convolutions of the foetus, but are distinguished from the latter by the richness of their secondary convolutions (case described by Fischer). But we do not know if such a state of the convolutions is compatible with the integrity of the intellectual faculties, or if these anomalies are found more frequently with idiots than with the sound minded. There are also brains, the hemispheres of which are composed of a large number of very small convolutions, which present secondary transverse sulci, and recall somewhat the convolutions of the dolphin. This anomaly of the convolutions may comprise both hemispheres (as in the case which I have described in the work presented to the International Medical Congress at Geneva, 1878), or may exist only in some convolutions, as in the brain of which I have the honour to exhibit a drawing; you see the parietal convolutions alone are subject to this anomaly.

(6.) With certain idiots, the morphological structure of the convolutions present, sometimes, anomalies which cannot be explained by a simple arrest of development, and which belong to the anomalies called by Pozzi *anomalies reverting through deviation of development*, that is to say, the morphology of the brain approaches, in its structure, that of the same parts in the inferior races, or the anthropoid apes. These anomalies are characterised by an excessive development of the external perpendicular fissure; hence, the occipital lobes have the form of a skull-cap as with monkeys. Similar anomalies have been described recently by MM. Pozzi, Guillaume, Sander, and François Fisher. But these observations are rare, and those which will be collected in future will show how far these anomalies are more frequent with idiots than with those whose intellectual faculties are sound. We may say, indeed, that these reverting anomalies have been observed in individuals endowed with normal intellect; a case of this kind has been published by Maynert in the "Archiv. für Psychiatrie," 1876. Professor Broca has had the kindness to show me the brain of a distinguished man of letters, who recently died, and with whom this anomaly was very well marked.

(7.) All the anomalies which the brains of idiots present may be combined together in the most diverse manner, and in one brain we may meet with not only different degrees of arrest of development, but also the reverting anomalies and purely pathological lesions.

(8.) We have often observed that the same parts of the brain

present, with different idiots, an unequal development. This fact, well studied, and accompanied by detailed clinical observations, may throw new light upon the study of intellectual development and upon certain characters of idiots, which have more particularly struck observers. Clinical observations show that there are idiots called *savants*. These are idiots who, while having general weakness of the intellectual faculties, are endowed with only one special and predominant faculty of imitation. It is thus that, there are in this class, some individuals who can apply their imitative faculty to drawing, singing; others who possess a special memory for proper names and words, but these faculties have quite a peculiar, and, so to speak, capricious seal, which does not submit to ordinary teaching. The savant-idiots may imitate an object perfectly well, but they cannot imitate another object which is quite analogous. In this relation they present a certain analogy with those labouring under aphasia, who can pronounce an entire word, but cannot pronounce separately the letters of which this word is composed. This faculty of imitation differs greatly with different idiots, and, like the different mental faculties, corresponds doubtless to different anatomical substrata. It follows, therefore, that, with different idiots, certain portions of the brain ought to be more developed than are the same parts with others, and *vice versâ*. It would be most useful to trace the connection between certain imitative faculties in idiots and the preponderating development in them of certain parts of the brain. Unfortunately we have no researches upon this subject.

(9.) But it is only the histological examination of the brains of idiots which reveals to us the most minute and interesting lesions and anomalies in the structure of the nervous centres of these degraded beings.

Histological examination shows us sometimes hypertrophy of the most superficial layer of the grey matter.

This layer is very little developed with men in a normal state; with monkeys it is more developed than with man; and with dogs still more than with monkeys. We find with idiots an atrophy or an enormous development of the grey substance of the convolutions and the nerve-elements. These elements are not grouped regularly, but dispersed *pêle-mêle*; they are sometimes surrounded with calcareous envelopes. But that which is most interesting, is the fact that, along with a great richness of the grey substance, the whole system of communication of the convolutions among themselves may

be profoundly injured and completely arrested. The brain which I exhibited to the Geneva Congress last year, may serve as an example. The arrangement and the disposition of the grey substance presents great irregularities in this brain. In the normal brain (Fig. 1), a transverse section of

FIG. 1



the convolutions presents between two sulci of the surface of the hemispheres a single curve of the grey substance, whilst in the brain of this idiot (Fig. 2), there exist many. It follows that the

surface of the grey substance in this brain must be enormous. The thickness of the grey substance of the convolu-

FIG. 2



tions is also greater than in the normal brain. In the different points of the hemispheres, the thickness of the grey substance varies between $2\frac{1}{2}$ and 7 milli-

metres. This phenomenon is explained by the fact that, in the brain of this idiot, the commissural fibres which unite the adjoining convolutions only exist in certain directions, whilst in large portions of the convolutions there are only "fibres of association" (Meynert), which unite the most distant convolutions. Thus with this idiot, the most distant parts of the hemispheres are united by nerve fibres, whilst the adjoining convolutions are deprived of these elements, and instead of these commissural fibres there exist only embryonic elements enormously developed, and of variable dimensions (maximum length = $\cdot 018$, maximum breadth = $\cdot 010$), their protoplasm showing great transparency and a very distinct nucleus.

Speaking generally, then, the richness of the grey substance, and the abundance of the nerve cells, may be accompanied by idiocy. But in this case, the system of communication between the convolutions is arrested in its development, and this failure in the connecting-links—this want of harmony in the development of the different nerve elements—renders an organ imperfect which is so prodigally endowed in certain respects, but so poor in others.

(10.) It is necessary, also, to mention those brains of idiots which appear well-formed, and of considerable weight, but which belong to individuals whose heart is very small, and its volume in consequence is out of all proportion to the size of the body.

Dr. Hagen having observed a case of this description, draws the conclusion that idiocy may depend upon the feebleness of the cerebral circulation, and may occur in a brain

perfectly well formed. This view is in entire accordance with the teachings of physiology, and the experiments of Brown-Séguard upon a head which had been guillotined; besides which, it has been observed with microcephalous idiots that, during fever, when the activity of the cerebral circulation is increased, the intelligence has appeared to be much greater than in the normal state. The observation of Hagen is not, however, complete; it lacks the histological examination of the brain, which alone can confirm these views, or give them another interpretation.

*On Nocturnal Epilepsy, and its Relations to Somnambulism.**

By M. G. ECHEVERRIA, M.D., late Physician-in-Chief to the Hospital for Epileptics and Paralytics, and to the City Asylum for the Insane, New York.

Few problems are we called upon to solve surpassing in importance that of demonstrating the insane nature of the evil propensities and criminal deeds, which are the outcome of nocturnal epilepsy. If, during the night, a man be periodically roused from his sleep in great bewilderment and mental agony, that quickly cease; or, if in the midst of apparent sanity, he were to be found, unexpectedly, in the morning, either maniacal, or sullenly disposed to unprovoked acts of extreme violence, we may, with confidence, diagnose that he is an epileptic, and irresponsible for what he has perpetrated.

Terrific dreams and somnambulism are commonly conjoined with highly neurotic temperaments, and are evidence, when closely studied, of the incubation of mental disease. Although these two nocturnal psychical phenomena are harbingers of insanity, this, in other forms than epilepsy, never sets in immediately after, or during sleep, but is, on the contrary, announced by obstinate, distressing insomnia. Indeed, the nocturnal accession during sleep of some of its most pernicious paroxysms is one of the distinctive marks exclusively belonging to the epileptic neurosis.

Unconsciousness, convulsions, and deranged mentality are the main elements of epilepsy. The predominant degree of

* The important bearing of this article, from the pen of so high an authority on epilepsy as the writer, upon the interesting case reported by Dr. Yellowlees, in the Journal for October last, will be seen by those who read both papers.—[EDS.]

one or more of these phenomena determines the specific character of the attack; it being a well-acknowledged fact, that the most violent convulsive forms are less apt to occur with concomitant insanity, whereas the magnitude of the impulsive misdeeds and blind fury contrasts strongly with the non-turbulent, concentrated, mental attacks, from which they often arise. And it is, besides, in these not rare psychical paroxysms, at times continuing for several days, that the characteristic unconsciousness acquires in the highest degree the very same aspect which it presents throughout somnambulism, when mental and sensorial activity exist without any conscious perception thereof.

Nocturnal epilepsy, so far as I have been able to ascertain, issues, in most cases, from determining causes, radically alike. Out of 783 epileptics 111 had nocturnal fits, and in 78 of them, that is to say in 75 per cent. of the cases, the fits were immediately connected with unmistakeable mental disorders of a more or less permanent nature.

Over one-third of the insane epileptics had nocturnal fits. Of the 783 patients, just named, 267 had insanity, whereas 78 out of this latter number had nocturnal seizures alone, or in conjunction with their diurnal attacks.

The etiology of the disease is recorded as follows:—

Hereditary predisposition, 25. Traumatism of the head, 16. Intemperance, 9. Syphilis, 7. Insolation, 3. Menstrual derangement, 4. Pregnancy, 1. Mental anxiety, 3. Fright, 1. Excessive corporal punishment, 1. Total, 180 cases. Unknown causes, 31.

The sex of these patients was: 42 males and 69 females, thus distributed in regard to their ages: children, 19; adolescents, 36; adults, 56. It should seem, therefore, that females are more liable than males to nocturnal epilepsy.

The preceding statement shows, that if we exclude four cases of menstrual derangement and one of pregnancy from the eighty cases of known ætiology, we shall have seventy-five epileptics, whose nocturnal attacks were the effect of encephalic agencies, such as: hereditary transmission, traumatism of the head, syphilis, intemperance, insolation, mental anxiety, fright, and suffering from excessive punishment. On the other hand, 92 of the total patients were subject to fits of *petit mal*, vertigo, absence of mind, faintness, or queer feeling in the head throughout the day; the remaining patients were constantly insane. From this fact, is it not legitimate to infer, that the nocturnal and mental paroxysms

—whether vertiginous, of *petit mal*, or of insanity—originate from one single root, since the same encephalic agencies operating on the accession of the ones operated equally on that of the others? This striking peculiarity further accounts for the potency of the nocturnal seizures to deteriorate mentality. Their close affinity to the cerebral attacks has again a great clinical significance, which leads me to regard nocturnal fits as pathognomonic signs of true epilepsy, a malady capable of being by treatment held in restraint, though, hitherto, seldom eradicated.

The example of pregnancy, as a cause of nocturnal fits illustrates the influence sometimes exerted by gestation on the development of epilepsy, and is notable, besides, in other respects.

A woman, aged thirty-five, of temperate habits, and whose parents were free from nervous disease, was seized with epileptic fits, when quick with child in her first pregnancy, and gave birth to a fine boy, who lived on in good health. Convulsive paroxysms recurred at every subsequent pregnancy, but never at any other time, nor during labour, although spasms, along with maniacal excitement, have supervened immediately after child-birth. She has six children, all but the first epileptic. The fits appear at night, once or twice a week, since the very beginning of gestation. She awakes from her sleep, feeling a strange *aura* all over her, with glottic spasms, but generally has no time to speak before the convulsions break out, when she becomes completely insensible, froths at the mouth, and bites her tongue during the paroxysm. Her mind is very much deranged; she is dull, and the nocturnal attacks alternate with fits of mania, that render her taciturn, and inclined to commit suicide. Her speech and hearing are unimpaired; sight dim, tactile sensibility diminished in the right arm and hand, but without paralysis in any of the limbs, which feel constantly cold. Skin dry, perspiration deficient. Pulse, 64, slow and feeble, rising to 88 during the fits. Heart and lungs healthy. Appetite poor, obstinate constipation. Urine acid, without albumen or sugar. Upon speculum examination, no abnormal state, or ulceration of the uterus was detected, although the patient complained of having had copious flooding during menstruation. This woman was kept under observation, but, in the seventh month of pregnancy, left the hospital, in September, 1867, to return to Philadelphia, where her parents resided. Treatment by bromide of potassium had no remarkable effect, and I was unable to learn the subsequent course of the case, or anything about the physical condition and family history of the husband.

I shall not travel out of my subject to dwell on the singular features of this case, but briefly notice that, what-

ever might have been the true original cause of the nocturnal fits that so deeply affected the brain, it acted upon the mother in her first pregnancy without reaching the foetus, and left her tainted with a predisposition which did affect the offspring at every posterior pregnancy. Finally, the sex of the child had no special influence on the incursion of the fits, as in the examples related by Van Swieten and Lamotte.

Let the reader form his own judgment in this other curious case, reported by Maury.

A pregnant woman, overcome by fatigue, goes to sleep, and, in an hour after, runs in bewilderment out of her house to climb up deliberately, with surprising dexterity, the horizontal branch of a large chestnut tree, where she lies down and continues, loudly snoring, in a profound sleep. She had to be fastened by ropes to be let down from her dangerous position. On awaking, after being lowered from the tree, she uttered a piercing cry, was madly agitated, and shed many tears.*

The newspaper account from which Maury has taken this record, omits to mention whether this was or was not the first seizure of the kind exhibited by the woman, and, consequently, we are deprived of sufficient information even to decide whether this instance was one of somnambulism, as Maury regards it.

I pass from this abstract of the determining causes of the nocturnal fits, to other preliminary remarks on somnambulism, required for a correct discrimination of certain forms of nocturnal epilepsy. I shall only bring forward here the chief points necessary to differentiate between these two mental conditions, as I could not attempt to condense in the very small compass of such remarks as these, our knowledge of all the interesting phases presented by somnambulism.

Without entering into physiological speculations, I shall acknowledge—as a matter of fact—that sleep, normally effected, lessens the pulse and the circulation and temperature in the peripheral parts of the body. When, by this lull, the whole active circulation subsides and sinks definitely to rest, the brain not only participates in it, but repairs its waste in sleep. Unless some local cerebral excitement be on foot, no dreams disturb the repose of the brain by the revival of inner sensations, or rather, by the memory of impressions of all kinds previously recorded by the natural reflex processes in the perceptive regions of the sensorium. These reminiscences, thus suddenly revived, provoke the countless ideas and delusions interwoven in the fanciful creations of

* “*Le Sommeil et les Rêves*,” 4eme Edit., 1878, p. 212.

our dreams. The more vivid the impressions of past images, or of those reflected on our mind at the very moment we fall asleep, the more likely will the latter be to induce hypnagogic hallucinations, and the former to become the well-spring of our dreams. But, in these special receptive conditions created by sleep, the excito-reflex laws essential to the life of the whole nervous system are never in suspense, and whether dormant or awake, the brain unifies, by its reflex and trophic faculty, the manifold latent and sensible impressions evolved out of the ganglionic system, received by the medulla oblongata, to underlie every kind of sensibility which makes us arrive at the true consciousness of our connexions with feelings of all kinds.

The sensorial and intellectual activity sink by the natural influence of the general collapse into temporary suspension during sleep; yet, as already stated, memory in our dreams rouses the intellectual faculty and excites it to thought, with prodigious energy, without participation of the senses. In somnambulism the senses and the intelligence acquire, on the contrary, an extraordinary keenness, though remaining entirely closed to outer impressions, notwithstanding the high degree of excitement to which they are carried by the record of impressions in the sensorium; or, to put it in a clearer manner, by the organic property of the nervous elements in the sensorium, which Luys calls *phosphorescence*, connected by endless links with our sensibility, emotions, and imaginary conceptions. Let me, however, remark that, in this condition, the heightened sensorial activity, absorbing all other psychical reactions, remains confined to the inner impressions developed into action, and the limited series of outer ones related to the object on which the mind is bent. For this reason, the somnambulist may avoid any obstacle to his design, but, having no spontaneity, cannot deviate therefrom, unless impelled by new impressions related thereto, and he is, in short, incapable of the slightest perception of any external impression within another range. This important fact should be particularly noticed, as it establishes a distinction between paroxysms of mental epilepsy and somnambulism.

A young somnambulist, described by Mesnet * during his attacks would adroitly make up his cigarette, and look for a match box to light

* "De l'Automatisme de la Mémoire et du Souvenir dans le Somnambulisme Pathologique," 1874, p. 22.

it, but if the match were extinguished just as it reached the cigarette, and another already lighted presented to him in its place, it was impossible to induce him to light the cigarette by means of the substituted match. He allowed even his moustache to be burned without offering any resistance, but he would not see or use the light thus presented to him.

This absolute incapacity to perceive the object, or even a light before the eyes, if not related to the succession of acts he was accomplishing, as well as the insensibility to pain usually observed during somnambulism, are phenomena—particularly the latter—which appear strikingly in conjunction with epileptic insanity. I have frequently noticed epileptics who, in their maniacal paroxysms, neither saw nor heard, and who, insensible to external impressions, inflicted on themselves fearful injuries, or tore off the dressing of their wounds, without the least evidence of pain. I do not recollect on the other hand any instance where the severity of pain following upon traumatic injury, or even during labour or surgical operations, has induced the outbreak of a fit, in any of the epileptics under my observation; on which account, I look upon painful excitation and epileptic fits as antagonistic to each other. Closely allied to this phenomenon is the singular freedom from injurious effects upon the most serious traumatisms shown by epileptics, and the rapidity with which, as a rule, their wounds heal without any suppuration. Only epileptics tainted with some cachexia form an exception to this remarkable fact.

The experiments of Claude Bernard on the sympathetic system demonstrate that neuro-pathological hyperæmia, instead of bringing forth a predisposition to trophic troubles, renders the part more resisting to the influence of the disorganising causes, while the disorders consequent thereon are more rapidly repaired. The reverse happens if the whole organism is subjected to powerful debilitating agencies, or if the animals experimented upon be diseased. These physiological experiments fully account, without need of comment, for the singularity just pointed out, and prove the essential agency which I attribute to the sympathetic in the pathogeny of the epileptic neurosis.

The psychical manifestations of epilepsy and somnambulism present other resemblances besides those already described. In addition to the unconscious automatic acting of the person, and the insensibility to pain, there is in either case complete amnesia of what has occurred during

the paroxysm. Maury gives a very lucid account of this phenomenon:—"The concentration," says he, "has been so heightened, the absorption of thought so deep, that the portions of the brain participating in the act of contemplation and thought become exhausted, and, when the attack ends, their action, instead of lasting, ceases as though struck with impotency. The phenomenon corresponds with a similar one in catalepsy, so often, as we know, associated with extasis and somnambulism; the exaggeration of the excitation or of the emotions induces a moment of stasis or arrest in the sensorial apparatus. In like manner, in extasis, the excessive contemplation and concentration of thought determines a complete cessation of movements, and on that account the reminiscence that results from the continuance of movement cannot be produced. The somnambulist forgets his acts precisely because the intensity of mental activity has been carried up to its utmost degree: the mind has been drained off, as it were, by its commerce with itself." *

These views, furthermore, explain why dreams, accompanied by motion and talking, almost always vanish from our memory. The explanation applies, with equal force, to the amnesia usually observed after the epileptic fit.

I have previously asserted that somnambulism generally forebodes when it does not betray insanity, and I may now add that its seizures are always initiated by dreams. It is well known also that dreams assuming the shape of incubus or nightmare are very frequent in the earliest stages of insanity, and that they constantly agitate the sleep of epileptics. Not only has it been easy to trace, in the studied cases, the affiliation of somnambulism to other neuroses, but the hereditary predisposition of somnambulists to nervous diseases has also been demonstrated.

I believe that in ordinary dreams only local portions in the cortical surface of the brain are over-excited; if the excito-reflex reaction consequent thereon is irradiated on the medulla oblongata, the dream is accompanied by talking or motion, and if the excitement reaches its highest pitch in a brain morbidly unstable, somnambulism takes place, the excito-reflex reactions of the sensorium starting up in every case from inner subjective impressions. The conduct of a somnambulist has, therefore, no immediate original external

* *Op. cit.*, p. 227.

cause, and in this respect Dr. Yellowlees' views as regards Fraser's delusions (see last number of this Journal), and in placing his case outside the condition of somnambulism, seems to me incompatible with our knowledge about the latter; for delusional is assuredly the dream that essentially brings forth the excitation of sensori-motor processes concerned in the special series of acts automatically accomplished by the somnambulist. Fraser's mental activity, though not consistent with sleep, as Dr. Yellowlees indicates, was, nevertheless, the unconsciously coherent activity adapted to the delusional feelings awakened by past images in his agitated mind, and which were offshoots from a morbid process developed in the brain. The functional disturbances of the nervous system occasioned by such trouble reach, as Mesnet asserts with great truth, "not only the organs of the senses and the very acts of the intellect themselves, but they rouse besides the instinctive excitation that overcomes the defenceless man deprived of discernment and reason to drive him to most deplorable misdeeds." *

Even in ordinary dreams the fanciful image that starts them is changed, or modifies itself, by the intervening peripheral sensorial impressions. This influence of the outer impressions on the delusional ones is apparent in this simple experiment, made by Despine:—A hysterical somnambulist girl saw the Holy Virgin during her attacks; diplopia, produced by pressing the external side of the eyeballs, made the girl see two visions instead of one.† In somnambulism the dream is the prelude to the scene about to happen, when the hallucination adjusts itself, through external impressions, to the performance of certain acts which constitute the only objective part, coherent and sequential to the paramount delusional groundwork, so long as no inner or outer impression prompts the brain to different actions. Nothing better shows that the hallucination is a phenomenon of memory, and that it is intimately connected with outer impressions of the same order, than the following example:—An extatic precocious girl, eleven years of age—observed by Dr. Giné—saw in her visions a young man with whom she was in love, and, though quite insensible to the most powerful external excitants, would awake from her attacks as soon as her mother began to sing some tune of

* Op. cit., p. 29.

† "Annales Médico-Psychologiques," tome xvi., 1875, p. 336.

any music she had sung or danced with her lover.* The original hallucination, as we see, participates actively in every instance with the external feelings bearing on it; but what distinguishes this singular group of psychological phenomena, apparently free in somnambulism, is the unconscious automatism that underlies them from complete loss of spontaneity.

That Fraser was liable to attacks of his strange disease when excited or agitated during the day proves the powerful influence, previously pointed out, of the emotions on the production of dreams. As to the delusion that led to the homicide, and the circumstances connected therewith, I feel inclined to regard them as evidences of a nocturnal epileptic fit. The reasons for this opinion will be fully exposed after first stating the facts that serve as the basis of my belief.

It is a law of pathology, to be particularly remembered here, that deficient nutrition is an ordinary source of sudden local congestion in the affected organs; hence the cerebral phenomena that flush and upset the equilibrium of the nervous system take place in sleep as in any other condition of the epileptic. Sleeplessness depends on conditions of intense excitement and considerable mental activity; therefore, sleep cannot create a disposition to epilepsy, as is generally supposed, unless the nervous centres having recovered from their waste are returned, with more or less celerity, to the high degree of susceptibility that explodes in phenomena of a psycho-sensorial or convulsive character. I must not be taken to assert by this that nocturnal fits might not occur before the epileptic awakes. What I mean chiefly to indicate is, that so long as the brain feels the *besoin* of rest, *i.e.*, sleep, and a supply of nourishment has not been obtained, the imminence of the epileptic attack is not immediate. Hence epileptics are, upon going to bed, speedily overcome by profound sleep. Let me distinctly observe, however, that this does not refer to the insane epileptic who goes to bed in the night to continue in a more or less delirious state without being ever really asleep.

I have not met with a single instance of nocturnal fits happening just in the beginning of the patient's sleep. Not only does the reparative process of sleep impede the explosion of a fit, but, as I have particularly noticed in regard to epileptic insanity, convulsive attacks, followed by sleep, are

* "Annales Médico-Psychologiques," tome viii., 1876, p. 290.

rarely, if ever, immediately prolonged by a state of insanity. Sleep in such cases evinces that the paroxysm has ended, while sleep also ends mental epilepsy and produces the transition from it to sanity. When the psychical disorder lasts only a few hours, the period of sleep is a striking phenomenon, but should the mental attack be prolonged several days—as often happens—the terminal sleep, particularly if it occurs at night, passes unobserved. The epileptic awakes in the morning with the intellectual faculties clothed in their sound garments.

These circumstances explain why some authors, like Legrand du Saulle, regard the sleep in question as evidence of drunkenness engrafted on the fit—an exaggerated assertion not borne out by the numerous epileptics whose malady has not arisen from intemperance. One of the most typical instances of the phenomenon, independently of alcoholism, is that of a woman with periodical fits of epileptic insanity, attended by homicidal impulses against her daughter, which lasted from twenty-four to thirty-six hours. She fell asleep after them, and, on awaking, declared herself cured, and asked for her child. This example is borrowed from Legrand du Saulle's own cases.* It is not necessary to cite the case of Bisgrove and others familiar to the reader.

Sleep, as the closing accident of the insane attack, is noticed in several of the leading cases to be found in our modern works on Psychological Medicine. It further appears standing out quite prominently in one of the oldest and most faithful delineations of epileptic insanity that have come down to us. This relates to Hercules, from whom is derived one of the first names given to the epileptic malady, and I quote its interesting description from Josat—

‘One day, as Hercules was offering a sacrifice to Jupiter, he suddenly stopped, rolling his eyes blood-shot in a hideous manner, the slaver ran down his beard, his smile was convulsive and strained, and laying aside his garments, he became very much agitated. They thought he had returned to his senses, when he suddenly rushed to his weapons, ran after his father, his own children, and everybody, till finally he slew his wife and children. He was about slaying his father, when Pallas appeared, and checked him, throwing him on the ground. Then he quickly fell into a profound sleep. At length he awoke, the sight of all the slain around him terrified him, and his despair became extreme when the news was broken to him that he alone was the author of all this slaughter. He then contemplated

* “Etude Médico-Legale sur les Epileptiques,” 1877, p. 93.

suicide, overcome by desperate grief; but the entreaties of his friend Theseus persuaded him that this would be a cowardice. Thereupon, he consented to live, and retired to Athens. I invent nothing (adds Josat), all this is copied from Euripides and Seneca.* Gasquet has also reproduced this passage in his account of the tragedy of the *Mad Hercules*, by Euripides; but he considers the attack, without allusion to its epileptic character, as one of homicidal mania, out of harmony with the previous deportment of Hercules, as portrayed in the tragedy by Euripides.†

We could not, indeed, arrive at a just appreciation of the influence of sleep on epilepsy without previously knowing if there exists any influence of the hours of the day on the accession of the fits. Looking over the time in which my patients have been seized by their attacks, I find that the early hours of the morning were those when they showed the greatest frequency. Curiously enough, and in strong contrast with this observation, the decline of the day and beginning of the night appear as the time in which epileptics are almost exempt from attacks. The diurnal attacks of 214 epileptics during a period of fifteen consecutive months, if put together, give a total of 14,982 fits, happening at the following hours:—"Early in the morning," and on arising, 5,130. Between six o'clock in the morning and noon, 7,503. From "the middle of the day" to six o'clock in the evening, 2,153; and, from this latter hour to that of going to bed, from nine o'clock to eleven o'clock at night, 296.

No one can live among epileptics without being struck by their comparative calm and freedom from fits during the latter part of the day until they retire to sleep. Then, again, as I have already remarked, nocturnal patients are rarely seized by their paroxysms in the first hour of their sleep; nor is the period from ten o'clock at night to two in the morning that during which they appear most exposed to fits. During a period of twenty consecutive months, seventy-eight nocturnal epileptics had 2,896 fits between the hours of two o'clock and five o'clock in the morning, and 92 fits between ten o'clock at night and two o'clock in the morning. Grouping together the hours of the nocturnal and diurnal attacks, it is plain, as I have already stated, that the early hours in the morning are the most common for the explosion of the fit, probably because, as Herbert Spencer explains it:—"The

* "Recherches historiques sur l'Epilepsie," 1856, p. 9.

† "Journal of Mental Science," July 1873, p. 221.

longer repair goes on unopposed by appreciable waste the greater must become the instability of the nervous centres, and the greater their readiness to motory reaction on the slightest impressions.”* The records of crimes committed by epileptics show that the majority of them were perpetrated early in the morning, or late in the night; and, of all the manifestations of epilepsy, none are more apt to be associated with unprovoked sudden acts of violence than the nocturnal fits. For the medico-legal importance of this fact and its full discussion, the reader is referred to what I have published on the acts of violence and unconsciousness of epileptics in their relation to Medical Jurisprudence.†

Before speaking of the psychical phenomena which may prolong the nocturnal attacks, I shall briefly allude to the physical traces left by their occurrence.

Trousseau laid a great stress on nocturnal incontinence of urine as the chief pathognomonic sign of nocturnal epilepsy. The value of this symptom is unquestionable, but its existence is by no means so constant as Trousseau has represented it to be. Thus, of the 111 epileptics here considered, only 77 had incontinence of urine with their nocturnal fits. The symptom was, therefore, present in 69·27 per cent. of the cases. These patients comprised—19 children (under 12 years), 23 adolescents, and 36 adults. Consequently, all the children I have observed with nocturnal epilepsy, had incontinence of urine with their fits. The accident, when present, was in every instance the proof of an attack. I acknowledge, therefore, the great pathognomonic significance given to the symptom by Trousseau.

The number of nocturnal epileptics who bit their tongue, and exhibited its laceration on the morning after their attacks, was 42; namely, 13 children, 10 adolescents, and 19 adults. The ratio of these to the total of cases amounts to 37·84 per cent. Let it be further remarked that all these patients, except two adults and one adolescent, exhibited also nocturnal incontinence of urine.

The petechial eruption over the face and neck was a more frequent symptom than the preceding, for it was noticed in 63 patients: comprising 13 children, 18 adolescents, and 32 adults, or in 56·75 per cent. of the whole nocturnal cases.

The appearance of the petechial eruption has not been the

* “Psychology,” Vol. i., p. 90.

† “American Journal of Insanity,” April, 1873.

same in all the cases. In some cases the points were extremely minute, and almost imperceptible around the eyes, and in the forehead and neck. Not rarely the mucous membrane of the mouth has also displayed small ecchymotic patches, which have besides existed over the conjunctivæ, and, in five instances—three males and two females, all adults—the whole sclerotic was covered by a sanguineous extravasation, which extended also over the eyelids. Every nocturnal paroxysm, recurring once or twice weekly in a female, left a very minute confluent eruption over the neck and upper limbs, which passed off within two or three days, and acquired greater extent and distinctness whenever her fits of *petit mal* augmented immediately upon the nocturnal attacks which were followed by paroxysms of laughter and mania.

In regard to the condition of the retina after the nocturnal attacks, I may simply repeat what I have long ago stated in reference to the post-paroxysmal changes of the retina in ordinary epilepsy. Hyperæmia of the retina, in uncomplicated cases, does not last long, and disappears in a few hours with the vanishing of the effects of the fit. This, of course, refers to a degree of hyperæmia sufficient to indicate a departure from the normal state, as it is almost impossible to distinguish the slight evanescent oscillations in the flow of blood through the vessels of the retina. Hyperæmia is not a fixed, but a relative condition of the circulation. Furthermore, not seldom, no appreciable vascular changes are observable in the retina during the paroxysms of epileptic insanity, and, for all these reasons, I look upon the retinal changes as of themselves possessing no specific value to demonstrate the previous occurrence of a nocturnal fit.

The pulse is subject to noticeable variations before and after the nocturnal attacks. It usually lessens—sometimes by as many as from ten to fifteen beats—the habitual pulse of the patient, in the morning after his nocturnal attack; but, the evening previous to it, the pulse increases in frequency, and becomes irregular. Several tracings obtained with the sphygmograph, have shown me that this acceleration accompanies a marked dirotism, equally manifest for a few hours—four or six—after the cessation of both the diurnal and nocturnal paroxysms. Finally, in cases of insanity, I have regularly observed an elevation of the central temperature—from 1° to 2° Fahr.—above the morning temperature, on the night of the attack, a symptom which has enabled me to prevent the threatening fit by the administration of nitrite of amyl.

There is yet another physical trace of the nocturnal attack, which has scarcely attracted the attention it deserves, specially in reference to the intellectual disorders fostered by the hidden paroxysms. Many epileptics, immediately after the explosion of the nocturnal fit, but principally in the morning, awake with numbness, or painful weakness, often amounting to actual transient paralysis, in one or both upper limbs, rarely in the lower ones. In many cases, and such cases are, indeed, the most frequent, some of the muscles, supplied by nerves from the medulla oblongata, are those affected by the paralysis. Then, it chiefly involves the muscles of the eye—nearly always a slight though evident convergent strabismus; sometimes there is ptosis; or, again, we find thickness of articulation, with tremor of the tongue, and more or less inability to put it out; and, under these circumstances, I have never failed to notice also headache. The observation I wish to make in reference to these paralytic phenomena is, that their accession after the nocturnal attack precludes—so far as I have seen—the occurrence of mental disorders, because the attack, as I am about now to explain, has come to an end.

The nocturnal paroxysms may be reduced to three very distinct groups:—

1. Attacks which suddenly break out either silently or with a piercing cry, in the early hours of the morning, without hardly ever rousing the epileptic from his sleep, and usually accompanied by incontinence of urine, biting of the tongue, petechial eruption, headache, or the paralytic symptoms just described, in the morning after it. These fits, almost always single, terminate quickly, and are never the precursors of an insane awakening of the patient because—as I said a moment ago—the evolution of the attack has come to an end with its nocturnal accidents.

2. Attacks in which the convulsions, which are limited to the face, lose their importance by the pre-eminence of the delusional element which gives character to the paroxysm, and drives the epileptic to automatic acts and frantic excitement, of a short, but more prolonged duration than in the former case. The outburst of excitement at the end, constantly observable in this kind of seizures, differentiates them from those of ordinary somnambulism, in which the reflex violent assaults and reactions inseparable from the epileptic malady are always wanting. If not roused during the fit, the epileptic awakes in the morning bodily and mentally depressed, without the least knowledge of what he has done, and with a confused, vague recollection of his dreams during

the night. This, again, is an attack which has been terminated, and, as a rule, such attacks are single.

3. Attacks that generally recur three, four, or even more times in succession, accompanied by fearful hallucinations, but free from the automatic acts observed in those of the second group, and followed, not by quiet sleep, but by a delirious restless state, with ever-increasing persistence of the hallucinations that make the patient yield to their sway in a boisterous or maniacal manner. In some instances, the patient may fall after the fit—ordinarily then not turbulent—into a profound stupor, in which he is found in the morning, to remain, for days, in blank indifference, sunk in a sort of catalepsy, passing the excrements and urine on his person. In other cases, instead of the stupor or dejection, the most exalted ideas take its place; in others again, the epileptic, in his paroxysm of insanity, talks and acts in an apparently conscious manner, though actually utterly unconscious of his acts, and without any appreciation of his outer relations. In this state, the least moral or physical impression may prompt a sudden violence, helped by the hallucinations of hearing, or sight, and the distress of the general sensibility which underlies this psychical manifestation of epilepsy. In this third category of attacks, the nocturnal accident is the initial episode of the paroxysm of insanity, which may continue for several hours throughout the following day, or even for a longer time.

If I have so particularly distinguished these three kinds of nocturnal fits, it is to show better how some of them have been and are mistaken for attacks of somnambulism, particularly when the antecedent history of the individual is unknown. This confusion can only occur with attacks belonging to the second group. The following examples bear out the truth of these assertions:—

A girl, 17 years old, whose maternal grandmother and aunt were insane, had *petit mal* at the age of 13, on the establishment of menstruation. At that age she exhibited, besides, what were considered by her parents to be attacks of somnambulism. She would, late in the night, leave her bed to go to her mother's, terrified by the vision of a large cat, that stealthily entered her room to scratch her, and always screaming, in great agony, "The cat! the cat!" She would awake from this nightmare on being violently shaken, or on the application of ether or ammonia to her nostrils; and she would then remain, for a few minutes shivering all over and confused. These

weekly attacks continued, without increase, for nearly two years, when they suddenly assumed a decidedly convulsive character, and were preceded by a piercing cry, with the vision of the same wild cat. They were also accompanied by incontinence of urine, and in the morning, the girl had no remembrance of their accession, but remembered her "bad dream with the cat."

I saw, in consultation with Dr. Peaslee, a married lady from Buffalo, aged 32, whose father, epileptic since childhood, had died insane. She had, from her youth, been frequently disturbed by dreams, in which she would talk and sing, or become heavily oppressed and terror-stricken at the sight of hideous persons chasing her. One night, feeling herself, during sleep, harassed by these fantastic visions, she furiously seized by the throat her husband lying in bed by her, and nearly strangled him. On being brought out from this struggle, she appeared very excitable, and had sudden jerkings of the limbs. Two months after this singular occurrence, this lady, who had been subject to occasional faintings throughout the day, was seized with *haut mal*, on awakening in the morning, for which reason we were consulted on her case.

A young farmer, at Mahopac, near New York, fell through the trap-door of a granary, and received a blow on the head that stunned him for a short time. Nothing remarkable was noticed afterwards, beyond a tendency to be apathetic and irritable in the day time, and to get up late at night—contrary to his habits—to go to the stables. On one of these occasions, in June, 1863, he stabbed and killed his own horse with a hay-knife, and returned to his bed. The next morning he was very much struck on seeing his horse dead, and did not remember having gone late at night into the stables; although, on returning to his room and being questioned by one of his companions, he did on this as on previous similar occasions, reply that he had heard noises of persons in the stable. He, however, recollected dreaming about fighting with burglars, but could not be persuaded that he had killed his own horse, notwithstanding the stains of blood on his night-shirt. This extraordinary occurrence was looked upon as an attack of somnambulism. Carefully watched by his friends, this young man, a few nights after, became agitated and wetted his bed, before getting up to dress himself and to do the apparently quite methodical acts above mentioned. I was then consulted, and pronounced his attacks to be epileptic. Subsequently this young man became insane, and was placed by his relations at the Asylum at Canandaigua.

I have recently been consulted by a gentleman, 42 years old, subject to an invincible mental and physical depression, which increase upon the accession of the same nocturnal paroxysms, seizing him during sleep, always between three and four o'clock in the morning. He becomes, then, possessed by a mental feeling as though he were slowly raised into the air, in danger of being at the least motion precipitated into a

fathomless abyss, and with the body covered by profuse perspiration. It requires a great struggle to shake off this distressing feeling, and, although he continues after it in a drowsy condition, it is never that of refreshing sleep, but an uninterrupted flow of all sorts of hallucinations of sight, a series of hideous dissolving views, tormenting him to such an extreme, that he is often obliged, with a great deal of effort, to get up and bathe his head with cold water, to overcome such mental agony. He further states that in these paroxysms he has unconsciously written letters which he has afterwards found, with surprise, among the papers on his table ; and he also affirms that, not long ago, he automatically went out into the streets, not knowing where. On his return, he was amazed to find himself coming home at such a late hour, not knowing from what place he came, when roused from this state by the servant who met him as he re-entered his apartment. He is, in consequence of these occurrences, in great dread of insanity. In the day-time, he frequently feels—particularly in the mornings—a flash before his eyes, with a momentary giddiness ; and during one of these seizures, which happened in my presence, I distinctly saw the spasmodic contraction of the pupils for a few seconds, along with nystagmus, and a very perceptible quivering of the eyelids. This patient is very reticent as to his family history in regard to hereditary predisposition to insanity, but I have learned, through his friends, that the maternal branch of his family have been subject to gout and apoplexy, and that one of his maternal uncles died an epileptic. Be this as it may, I have had no hesitation in regarding and treating the case as one of epilepsy, classing the man among the *cérébraux*, of Lasègue, as he besides exhibits a plain asymetry of the face and palate.

The preceding, and other similar examples which could be added, might have been easily mistaken, and, indeed, some were actually mistaken at first for attacks of somnambulism, until on closer investigation, and after some continuance of the attacks, the true epileptic nature of the nocturnal phenomena was recognised. If we confine ourselves to the descriptions contained even in the most esteemed works, it is impossible to establish definitely the nature of the wonderful cases of somnambulism related in them ; and, as such relations cannot now be submitted to a thorough revision, the subject must be determined by the result of the careful clinical observation to be made in every new case. The existing theories on dreams, somnambulism, and states allied to it, may be sufficiently satisfactory for psychologists, but, no matter how well supported they may seem to be by speculative views, they need to be proved by more complete research before they can be applied in practice without risk of calling

somnambulism what is in reality epilepsy, or *vice versâ* ; a risk which may be of great moment to the patient and to the safety of society. Therefore, the opportunity should not be allowed to pass by for such studies. The recent tragic and painful case of Fraser, to which I have before alluded—has prompted these broad outlines, which, though imperfect, show the principal characteristics which may enable us to distinguish the epileptic nature of any nocturnal paroxysm. Fraser's medical history requires, in order to be complete, a more extended clinical observation ; nevertheless, the interesting account given by Dr. Yellowlees furnishes—as I will endeavour to show—details and symptoms, which strongly indicate the manifestation of the epileptic neurosis in one of its not uncommon forms.

The trial of Fraser calls for a remark which I cannot avoid. It was a trial in which all concerned judged the prisoner not to be responsible for his acts, and nothing could be said against such a just and humane verdict. Yet, the setting at liberty of Fraser, on the undertaking given by himself and his father, that he would thenceforth sleep in a separate room, apart from any other person, was a legal decision which I most emphatically condemn, though fully conscious of the benevolent motives that dictated it. The keeping and supervision of Fraser in an asylum, and, in short, his restraint—needed very much, as I believe, by his present state—might, no doubt, be a hard measure, disagreeable to him, but that could be no plea to set against the safety of society. It is evident, as has been acknowledged by the physicians, that Fraser was temporarily insane, and when we realize the no less positive fact staring us in the face, that his father, wife, half-sister, fellow-lodgers, and a fellow-prisoner in the gaol, had all been dangerously assaulted by Fraser in his habitual nocturnal attacks, it is impossible not to believe that the gravity of the case has been misjudged by a short-sighted benevolence, and that, in spite of his pledge, Fraser may unconsciously come out of his separate room, and re-enact, on any future night, his dreadful acts of violence, to increase with some new tragedy the long list of painful preventible criminal occurrences, published by Dr. David Nicholson, in his recent valuable and most practical paper on “The Measure of Individual and Social Responsibility in Criminal Cases.”*

* “Journal of Mental Science,” July, 1878, pp. 265, *et. seq.*

Let us now pass to Fraser's symptoms, as narrated by Dr. Yellowlees. The hereditary predisposition, the nocturnal incontinence of urine for years after the usual age; the restless and uneasy nights troubled by dreams and nightmare, appear conspicuously among Fraser's antecedents. He generally fell asleep very soon after going to bed, and the seizures usually took place about midnight, or within an hour before or after it. They recurred at very irregular intervals, and their duration seldom exceeded a few minutes.

Having fallen asleep, as usual, great terror suddenly seizes him, and he starts out of bed under a vivid feeling that some dreadful evil is impending, that the house is on fire, that its walls are about to crush him, that his child is falling down a pit, or, most frequently of all, that a wild beast has got into the room, and is about to attack him. Roaring inarticulately, and in an agony of apprehension, he tears his wife and child out of bed to save them from death; or he fiercely chases the wild beast through the room, throwing the furniture about in order to reach it, and striking at it with whatever he can use as a weapon; or he suddenly seizes his companion by the throat, under the idea that he is struggling with the beast. The beast is a wild dog, horse, wolf, or other animal, and often some creature of the imagination more terrible by far.

Unless awakened at the time, Fraser remembers nothing whatever about these nocturnal occurrences, although he usually infers, from feeling wearied and unrefreshed, that he has been walking. If aroused at the time, he is confused and agitated, usually trembles a great deal, drinks water, and goes quietly back to bed again and to sleep. He can then, however, recall the ideas which possessed him, and remembers them in the morning.

These different phenomena agree in every point, and in the most striking manner, with the characteristic signs of nocturnal epilepsy. The shortness of the attack, the speaking and moving during it, the great terror and evil delusion, the visions of fire, the final outburst of frantic violence, the confusion, agitation, and excessive trembling when aroused, his remembering nothing about what had occurred the day after, although recalling the ideas that had possessed him, are all characteristic phenomena of the second group of nocturnal attacks which I have described, and all stand out prominently, besides, in the cases which I have adduced. And, to place the proofs of the epileptic nature of the seizures beyond all doubts, we have the additional pathognomonic symptom of the nocturnal incontinence of urine.

The point that has chiefly perplexed the diagnosis of Fraser's nocturnal attacks has been the character of his delusions. Dr. Clouston did not consider Fraser's condition insanity, "because it occurred during sleep. He had never heard of a case like this before, where a person believed that it was a beast he was attacking." The first proposition is a broad general conclusion, which needs qualification to be granted, for no one will deny the accession of epileptic insanity in the night during sleep. The cases again, where a person has believed that it was a beast he was attacking, are not of exceptional occurrence. As I am dealing with nocturnal epilepsy, I shall draw from it the evidences relevant to this point. The delusions of sight exhibited by Fraser have been described by Brierre de Boismont, Morel, Baillarger, Falret, and other standard authors. The visions of wild beasts and animals of all sorts are constant with alcoholic epileptic insanity, but, I repeat, we meet with them, besides, originating from other etiology, as evinced by the girl whose case I have cited. The woman whose history, recorded by Mr. Mercer, has been reported by Dr. Hughlings Jackson,* the next morning after one of her raving and furious nocturnal fits, in which she saw herself surrounded by enemies, said that she had seen "wolves" about her. It will be remembered that the wolf was one of the beasts with which Fraser struggled. I find the following example in one of our old classic works which has fallen by chance into my hands.

I have seen in 1752 (reports Tissot), a very robust mason, 21 years old, who was attacked by the disease after being frightened in a dream. He imagined that he was chased by a bull, and he awoke from his dream in wild agitation with delirium, to be, in about a quarter of an hour after, seized by a severe fit of epilepsy. I saw him the next morning, he still continued agitated, and was overtaken by a second attack as he was giving to me an account of his state. He had two more fits during the week, both preceded and followed by the same feeling of fright, but he has not had any more since."†

One of the epileptics at the hospital always uttered a piercing cry in his nocturnal attacks, and when awakened would appear terrified and shivering all over. He invariably saw in his fits a mad dog biting him.

* "West Riding Medical Reports," 1875, p. 126.

† "Traité de l'Epilepsie," 1785, p. 41.

Another woman—not intemperate—felt a cold snake creeping up her limbs to twist itself around her body, and strangle her, at the commencement of her nocturnal seizures. We have seen that the farmer at Mahopac imagined himself to be fighting, not indeed with beasts, but with burglars, when he killed his horse. Chambers, tried, years ago, for murder in Brooklyn, and sent to Auburn Asylum, being haunted by visions of all kinds, and men who made faces and spat at him, fired the shot which killed his victim [unknown to him; the same delusions possessed him in his sleep.

The foregoing observations make it manifest that, compared with acknowledged facts, the delusions entertained by Fraser do not differ from those in epileptics; whilst the instantaneous automatic assaults and violent reactions that accompanied them, further confirm their epileptic source, since such phenomena are not observable in conjunction with somnambulism.

Hallucinations of sight existed in 60 per cent. (67) of the 111 epileptics here analyzed; hallucinations of hearing in 51 per cent. (57) of the cases; hallucinations of sight and hearing in 36 per cent. (39) of the cases; hallucinations of smell in two of the cases; and, of taste in one case. Finally, in 27 per cent. (31) of the cases, there was numbness, anæsthesia, or some other trouble of general sensibility.

The visions of the nocturnal epileptic are not constantly of a terrific character; they often assume the same religious form which they take with many of the diurnal attacks, and particularly described by Hecker, in the dancing maniacs of the fourteenth century, who were epileptics. Haunted by these visions, they saw the heavens open, and the Saviour enthroned with the Virgin Mary, remaining otherwise insensible to all external impressions through the senses.*

It cannot be denied that the trances and visions of Swedenborg, as Maudsley has shown,† were of an epileptic nature, while the visions and dreams of Mahomet—who was also an epileptic—serve as the foundations of a religion practised by millions of our race.

The analysis of the process by which the hallucinations of the somnambulist and the epileptic are—through correlated outer impressions—brought into action for the accomplishment of a series of automatic acts, apparently conscious, clearly explains why: “although heedless of all else, and thus

* “Epidemics of the Middle Ages,” Syd. Soc. Trans., p. 81.

† “Journal of Mental Science,” 1869, p. 175.

blind to all else, Fraser sees whatever is connected with the paramount delusion."

To the correlation between the subjective sensorial image and the external impression, as also to the permanence of impressions or thoughts in the sensorium at the beginning of the attack, is due moreover the purposed execution of many acts by the epileptic during his fits. How far the intention, or supremacy of the will, may keep up when the other cerebral faculties become obliterated, is shown by that malingerer who, under the influence of chloroform, could—as Bouisson relates—still control his will sufficiently not to answer anything that might disclose his imposture to avoid duty.*

I have reported, among others, the case of a girl who, seized by a fit while she was dressing to go to the theatre, and, irritated at her mother's opposition to her going, as she remained with the mind as usually deranged by the fit, deliberately asked for a glass of water, requesting her mother to approach to the bed where she was lying, and thereupon dashed the glass, with a vindictive exclamation, at her mother's forehead, remaining very much excited. On recovering from the attack in a few hours, she had no knowledge whatever of the injury she had inflicted on her mother, to whom she was tenderly attached.

A girl, twelve years of age, for two years epileptic, was undergoing treatment with hardly any improvement. One evening, while preparing for herself a cup of tea in her mother's room, she had a short slight attack. At the end of it, seemingly then conscious, she went, holding a cup, to take the small kettle of boiling water from over the gas-burner, and automatically poured the water, not into the cup, but over her fore-arm and leg, burning herself severely, without the least sign of pain; from that day the fits disappeared.

Dr. Hughlings Jackson reports that one of his patients had been reading in the newspapers of the Queen's way of bringing up her children; after his next fit he said that, "the children were all put under the Queen's shawl, and were going up above."†

The blindness and deafness of epileptics to whatever is not connected with the feeling which possesses them, has been before alluded to here. One of my patients in his wanderings, would not recognize his own brother, nor his friends.

* "Traité Théorique et Pratique de la Méthode Anesthésique," p. 230.

† Op. cit., p. 118.

He came near being killed by a locomotive he did not see, at a railroad station, during one of his fits, in which he had to be taken up by the police. Dr. Hughlings Jackson cites an epileptic who "loses himself," but goes on walking during his fits. In one of them, "he lost himself at Blackfriars, and came round again when at the Elephant and Castle. He has been knocked down by an omnibus, and has once nearly walked into the Thames."*

The wandering of the epileptic during his nocturnal attacks is a phenomenon in one of the cases I have already related, and which exists besides in several other examples which there is no occasion to adduce now.†

To appreciate in all their bearings the sensorial phenomena under consideration, we must not lose sight also of the fact that vivid acute impressions, instead of vanishing, revive with great force, blunting all other feeling, particularly in morbid conditions of the brain. The perceptive regions of the sensorium, after the first seizure, preserve a sort of photographic negative, if one may so speak, through which every subsequent impression is taken, producing the same image of the first psychical phenomena, with the invariable identity which is stamped on the epileptic attacks. This peculiarity appears plainly in the following example:—

I saw in New York a young lady whose father and husband were shot in her presence by a lawless infuriated band of volunteers, during the last Cuban insurrection. She lost her mind and speech in consequence, never recovered from the shock, and remained, besides, subject to nocturnal fits of epilepsy, followed by a state of complete insensibility and catalepsy, throughout which—without breaking her silence—she was at times aghast and colourless, raising her hands to her head in an attitude expressive of great horror and grief. These paroxysms increased in frequency on the eve of the nocturnal fits.

I have already remarked that epileptics retain no knowledge of their diurnal or nocturnal fits; but only recollect more or less their dreadful delusions and dreams. I need not repeat my explanation of the cause of this amnesia, viz., an exhaustion of the mind through the extreme intensity of its activity, breaking that continuity in the record of impressions and their association which is necessary to memory. There are,

* *Op. cit.*, p. 121.

† The report of some of these cases may be found in the "*American Journal of Insanity*," April and July, 1873.

however, instances in which the degree of possession by the delusional thought, prior to the fit, and the purpose accompanying the delusion, are such as not to efface from the memory of the epileptic the acts he has unwillingly accomplished under the irresistible thralldom of the attack. In these cases, the unclouded recollection appears not only coupled with some spasmodic phenomena, but with the delusional absurd ideas that originate the whole attack, and distinctly mark its insane nature. A very characteristic case of this kind is reported in a most interesting and useful work recently published by Dr. E. Blanche.

A man, thirty-four years of age, had vertiginous epilepsy, since the age of eighteen, with headache, hallucinations of sight, nocturnal incontinence of urine, and violent impulsive fits of mania. In one of his attacks he killed the curate of La Loupe, and he gave to Drs. Lasègue, Blanche and Motet, the following minute account of the occurrence :—

“Very often,” said he, “I had a seizure. I suffered from headache. I did not see clear; my stomach was upset, and then my throat was choked; I could no longer breathe. I slept scarcely ever, and during the month of August I slept not at all. I saw phantoms in endless number, I felt as if afraid of my own self. I never spoke of that to any body. One night I was in bed, when I perceived something leaning against the stable door; it had a very strange figure. I got up, went to see it, but it had disappeared. I went back to bed, and the figure returned again. I got up three times, always saying to myself, ‘My God, how strange is this!’ I then thought that it was something in myself that tormented me, that I had been regarded by the evil eye of some one; and I did not sleep at all. In the morning I arose as usual; I took the cows to the meadow; said nothing to my mistress; I called on the curate of Pontgoin, and told him of everything; I told him I thought that I was bewitched; I thought of it without believing it; I, nevertheless, supposed that there was something in it, but I harboured no suspicion against any one. The curate of Pontgoin quieted me; he advised me to take a foot bath and some decoction of lime leaves, and I felt better thereafter. I experienced the same feelings, and got up another night again. I saw everything red, and thought there was a fire; I missed the steps of the stairs and fell down; my mistress may have taken notice of it that time.

“The night between Wednesday and Thursday (22nd to 23rd of February) I could not sleep, being incessantly harassed by dreams—it always seemed that I saw something, shapeless figures before my eyes—and I felt frightened. I did not get up; I called the sheerman, lying down by me, to ask him the hour. I was quite tired and fatigued with lying in bed; it frequently happened that I could not

sleep ; but the following night I slept very well, and I did not feel the seizure until after I had drunk my coffee.

“It happened that I had to go to La Loupe, and I don’t know what possessed me. I got up quite composed at seven o’clock ; I went out and the landlady of the inn was preparing some coffee for herself. She asked, ‘Do you wish for some?’ ‘I don’t care,’ said I ; ‘I would take some if you have any to spare.’ After I had drunk that unlucky coffee, my stomach was upset. At that moment a man came with a turkey. My head had been for long time feeling at moments very queer. The sight of that turkey impressed me ; it was in a basket lying in the middle of the street, and the more I looked at it the queerer it seemed to me. I could not remove my eyes from it, and I could not either explain why. I turned round, and then I saw its image by the bed of little C— ; the turkey was dancing with two heads on. It was then that I went away. I felt possessed and upset, I don’t know how. I called on the curate, he was not at home, and had gone to church. I went in there. I took the holy water, as I always do ; I tapped at the grating of the confessional ; the curate asked what I wanted ? I replied that I was looking for consolation. I tapped again, and he ordered me to go away. Then he went out of church, saying to me that he was going to call the gendarmes. I had my knife in my pocket, and I stabbed him with it. Thereupon, they came to arrest me.”*

If I have quoted this description at such length, it is because, as acknowledged by the skilful alienists who reported on the case, this minute account of all the feelings preceding the murder, exhibits of itself, without need of any addition or explanation on the main characteristics of the disease, the irresponsibility of the homicide, involving the necessity of restraining such a dangerous lunatic in an asylum. Wise preventive measures, executed on the advice of the experts, which strikingly contrast with the liberty granted to Fraser, whose case belongs in its essentials to the same epileptic category of that of the assassin of the curate of La Loupe.

The psychical conditions that may prolong the nocturnal fits correspond to the form of epileptic insanity I have called intermittent, to which are referable the so-called larvated attacks. The similitude between some of these psychical manifestations and somnambulism renders their discrimination almost impossible in many cases. I have shown that this kind of epileptic insanity does not necessarily originate from somatic attacks of *haut mal*, or of *petit mal*, as Falret and others have supposed ; nor is its manifestation always

* “Des Homicides Commis par les Aliénés,” 1878, pp. 77-79.

connected with nocturnal fits. Such mental derangement and the somatic attacks are, in fact, as conjectured by Billod, divers manifestations of one single neurosis, which may alternate with, or exist separately from, one another.

My limits and the end in view forbid me to describe these mental paroxysms, the nature and significance of which I have discussed elsewhere in my different writings on Epileptic Insanity, closely comparing the cases studied by me with different descriptions of cases of the same kind given by English and French alienists. I have maintained, guided by such observations, that unconsciousness is the essential element without which any convulsive paroxysm is merely an epileptiform accident, or hyperkenetic symptom, with variable nosological value, according to the cerebral malady it accompanies, and as manifest from the progress and ultimate issue of such convulsions without the supervention of the mental and instinctive disorders pathognomonic of the epileptic neurosis. I have also tried to bring out in bold relief the part taken by the unconscious cerebration in all psychical phenomena of epilepsy, from the simple strangeness of the momentary fits of *petit mal* to the long continued automatism in the fits of epileptic insanity on which unconsciousness puts its indelible mark.

We are accustomed to deduce from the predominance of the mental phenomena, and from not closely watching the psychical manifestations of epilepsy, that they occur without perceptible convulsions at any stage of their evolution. Dr. Hughlings Jackson thinks it probable "that there is a transitory epileptic paroxysm in every case of mental automatism occurring in epileptics before their mental automatism sets in;" but he is "fully aware, and freely admits, that occasionally no signs of a prior fit are *discoverable*." This last italicised word is Jackson's, and I assume it is to express that the contrary may be the real fact. I have not met with a single instance of epileptic insanity, whether breaking out by itself or accompanying diurnal or nocturnal fits, in which throughout its duration I had not detected manifest convulsive contractions in the pupils, along with quivering of the eyelids and mouth, and, not rarely, with a thrill and slight shiver of the arms. All these delicate motor discharges, limited to the iris and regions animated by nerves from the medulla oblongata, are apt to occur more frequently with the cataleptic forms of epileptic insanity. They always exist for one minute, or longer, at intervals, after the explosion of fits

of violence, and I do not know whether these slight oculopupillary convulsions be not also among the very initial phenomena of epileptic insanity, when it sets in without direct or indirect relation to convulsive fits. If these motory phenomena possess the significance I attach to them, it will be evident that the essential factors of the epileptic neurosis are—unconsciousness, convulsions, and a disordered mentality necessarily growing out of them. These are the conclusions to which I have been led by clinical observation of cases in number sufficient to authorise them.

There is one point in which my observation disagrees with Dr. Hughlings Jackson's views in regard to the unconsciousness or mental automatism, as he calls it, in connection with epileptic insanity. He considers that—"the mental automatism results from over action of lower nervous centres, because the highest or controlling centres have been thus put out of use. The automatism in these cases is not, I think, ever epileptic, but always post-epileptic."* The first necessary premiss to warrant Dr. Hughlings Jackson's conjecture, would be to demonstrate that the mental automatism, or psychical phenomena, are effects of the convulsive attacks, whereas, on the contrary, it seems proved that such psychical phenomena are *per se* manifestations of the neurosis, which may or may not occur in connection with the convulsive discharges, or physical paroxysms. And, where would be the post-epileptic occurrence of the automatism in the large category of cases in which a fit of epileptic insanity, with its unconscious acting of the patient, lasts for one or more days, as the prelude of a convulsive seizure that terminates the insane attack? How could we say that the awkwardness and automatic unconscious doings which betray the mental condition of the patient, and constitute the very symptoms of *petit mal*, or of the incomplete attacks, are phenomena "post-epileptic?" I take, without selection, two among the several cases analysed by Dr. Hughlings Jackson, to show that they do not support these views. The following is the account of one of the frequent attacks exhibited by a patient at the hospital.

I felt symptoms of an attack, and sat down, I believe, on a chair against the wall. And here my recollection failed, the next thing I was conscious of being the presence of my brother and mother (who had been sent for as they lived opposite), and I have since been informed by my sister-in-law that she came into the kitchen and found

* Op. cit., p. 111.

me standing by the table mixing cocoa in a dirty gallipot, half filled with bread and milk intended for the cat, and stirring the mixture with a mustard spoon, which I must have gone to the cupboard to obtain.

Another example—

A few days ago, he (the patient) went into the back parlour, as he felt he was going to have a fit. His mother followed him, and found that he had taken a knife out of his pocket and was grasping it, not by the handle, but by the blade. His mother took it away, shut it up, and put it behind the bookcase. He went to the bookcase, got it again, and then kept waving it about, but it was now closed. His mother then got assistance, and the knife was again taken from him.*

It seems very plain that the automatic acts in these two examples co-existed with, and constituted the main symptoms of the attack, with which they were contemporaneous. No fit preceded in either case to make the automatism post-epileptic. If we look attentively over the whole range of cerebral phenomena occasioned by the epileptic paroxysm, I see no others than paralysis and sleep, which could be properly classed as post-epileptic phenomena; for both these accidents proceed from the exhaustion and waste determined by the over-excitation of the nervous centres. Moreover, I have observed, as previously pointed out, that fits immediately followed by sleep very rarely, if ever, are accompanied by mental derangement; they are paroxysms that have ended. On the other hand, real *haut mal*—not the epileptiform convulsions—when accompanied by paralysis, terminates, as a rule, in a period of sleep, from which the patient awakes, discovering his post-epileptic paralysis.

To complete this sketch of the manifold conditions connected with the nocturnal attacks, I must briefly allude to the symptoms that forebode them. The increased frequency and dicrotism of the pulse have been already pointed out. The other psychical signs which announced the attacks in my patients were—frequent jerkings of the limbs; a feeling of general irritability or depression; headache; perspiration of the head and arms; obstinate hiccup, in a female; and, in another female, a very offensive peculiar odour of the perspiration indicated the approach of the attacks. The sensorial phenomena are the most frequent, particularly before fits accompanied by mental derangement. In addition to what I stated in regard to the comparative frequency of hallucinations, I may say that visions of a fiery, red, or bloody colour, are almost always experienced

* Op. cit., pp. 117 to 121.

by the patients. Walsworth, before his nocturnal fits, heard repeatedly the sudden noise of "a large book falling flatly on the floor." Another epileptic at the hospital, heard the whistling and ringing of a locomotive; a female would repeat often in the evening, "Lippa, Lippa;" another would constantly try to hide herself, without speaking, being at the same time very pale, and having an expression of fear painted on her face; finally, a lad would become very talkative and boisterous for one or two hours before falling asleep.

The insanity that precedes the nocturnal fits does not differentiate itself from that following them. Apart from the psychical disorders and hallucinations, to which I have referred, some patients may present an unusual mental activity and intellectual lucidity, as foreboding the nocturnal seizure.

A young man, 22 years of age, with hereditary predisposition to insanity in his father's and mother's families, became epileptic during childhood, and is an imbecile. The day before his fits, always nocturnal, he displays a remarkable lucidity and recollection of past events, describing them with vivacity and wit, and returning after the attack to his habitual demented state. He shows an obstinate determination to run away from the house, and a propensity to sudden violence. His head and palate are asymetric, and he is besides a monorchid.

I have to add but a few statements about the responsibility attached to cases of nocturnal epilepsy, repeating on this subject what I have asserted long ago.

Basing myself on the position that responsibility does not depend upon the knowledge of right and wrong, but upon the *power* to do right, I regard epileptics as irresponsible for any criminal act they may commit under the influence of a paroxysm. The recognition of our feelings and actions is consciousness, without which all responsibility is lost. That epileptics are destitute, even in the slightest forms of their mental attacks—though acting apparently rationally—of a proper recognition of their outward relations and feelings, is an obvious truth.

The foregoing facts require a greater development than has been given to them in these rapid outlines of the characteristic features of nocturnal epilepsy. I believe, however, that the considerations into which I have entered, support the following general conclusions:—

Nocturnal epileptic fits are observed more frequently in females than in males; and appear almost always associated with diurnal vertigo, *petit mal* or *haut mal*, when not with epileptic insanity.

The ætiology of nocturnal epilepsy is essentially encephalic, and it may be chiefly attributable to hereditary predisposition, traumatisms of the head, alcoholism, syphilis, and strong emotional causes.

The nocturnal incontinence of urine, the lacerations of the tongue, and the petechial eruption over the face and neck, are not constant phenomena, but, when existing, they possess an unquestionable pathognomonic value.

The sudden explosion of frantic momentary bewilderment in the middle of the night, during sleep, or of insanity on arising in the morning, are proofs of nocturnal epilepsy. If nocturnal incontinence of urine, hereditary predisposition, with strange peculiarities of character, extreme propensity to anger and furious violence, are observed besides, these phenomena then prove, beyond all doubt, the existence of epilepsy.

Most sleep-walkers and somnambulists are persons of neurotic temperament, exhibiting manifest signs of some neurosis, and ultimately arriving at unmistakable epilepsy or insanity.

The attacks of somnambulism seldom, if ever, present the short duration, or the final outburst of violence characteristic of the nocturnal epileptic fits with talking and moving about of the patient. Nor do the former show the uniformity and constant sameness of the latter.

Hallucinations chiefly of sight and of hearing, of a most frightful terrifying character, usually accompany and induce the wild excitement of the nocturnal fits.

The nocturnal epileptic shows, as a rule, complete amnesia of his doings during the attack, but keeps more or less vivid recollection of his delusions, as of a dreadful nightmare.

The nocturnal epileptic acting, like the somnambulist, in an unconscious automatic manner, cannot be held responsible for any misdeed perpetrated during his fits; he, however, must be regarded, in such cases, as one of the most dangerous lunatics, and restrained in a lunatic asylum.

Nocturnal fits accompanied by paralysis, are free from immediate concomitant insanity.

Finally, diligent and close inquiry into the phenomena of nocturnal epilepsy confirms the correctness of Trousseau's aphorism—"*Tout ce qui est accident nocturne doit faire songer à l'épilepsie.*"

Metalloscopy and Expectant Attention. By D. HACK TUKE,
M.D., F.R.C.P.

Having availed myself, when recently in Paris, of the opportunity afforded of visiting the Salpêtrière,* I have made a few notes of what I witnessed in the service of M. Charcot, although, from the shortness of my visit, I was not in a position to do justice to the subject which has recently attracted so much attention—the influence of metals in anæsthesia, hystero-epilepsy, &c. I can do little more than record facts, and suspend my judgment as to their nature and the explanation which further investigation will give of them.

I first saw a young woman (Wandeline), aged about 24, the subject of “Hystero-epilepsy.” On enquiry I found she had suffered from it more than three years, and had been in the hospital more than one year. Both sides of the body were affected with anæsthesia. When either arm was pricked she showed no signs of pain. Sometimes only one side—the left—is insensible. The first experiment consisted in fastening a small zinc plate upon the outside of the right arm, below the elbow. After a short time sensibility returned at this part, and in the neighbourhood. When pricked, the patient at once called out. In about twenty minutes the sensibility extended to the fingers.

In another case of hystero-epilepsy (Gleize), a young woman, aged 18, there was hemianæsthesia—right side. She also had attacks about once a week. The catamenia were irregular. Ovarian pain and tenderness were stated to be among the symptoms. Of this patient there was a spirited drawing hung up on the wall, in a hystero-epileptic fit. In this case a tin plate was applied, and fastened to the right arm, in a similar way to the other, and the same result followed, a return of sensibility at the spot. Previously M. Charcot had introduced a large pin in this part of the arm, as also through the folds between the fingers, and the right side of the neck, without the patient evincing any sign of pain. Sensibility having returned on the site and in the vicinity of the tin plate, M. Charcot pricked the corresponding part of the left arm, and the girl evinced no sign of pain. This is the *transference of anæsthesia*, to which M. Charcot attaches

* This visit was made in April, and this paper written shortly after. Unavoidable circumstances have delayed its publication until the present time.

so much scientific importance. That it occurs, there can be no doubt whatever; the only question is the mode in which it is induced. The patient was not allowed to see the arm which was being pricked. Above and below the spot, the sensibility appeared to be perfect.

Another fact was pointed out by M. Charcot, that the thimble finger on the right side feels, and that only. The thimble worn is of iron, covered with tin.

In this case an experiment was made in regard to the power to distinguish colours. The right eye* fails to distinguish any except red, but after a tin plate had been for some time attached to the forehead on that side, the patient replied correctly when asked what certain colours were.

In a third case (Whitman), of the same age as the last, hystero-epileptic fits occur about once a week. She has been two years subject to them, and has been one year under M. Charcot. There is anæsthesia of the right side of the body; pain on pressure in the region of both ovaries; most on the right side. There is anæsthesia of the right nostril, the right half of the tongue and pharynx. Anæsthesia more or less marked, of some part of the body, appears to be a constant feature of hystero-epilepsy. Pricking and introducing a pin of large dimensions into folds of skin in the neck, and between the fingers, did not cause the slightest apparent pain.

In this case a small coil of copper wire (solenoid), was placed on the right little finger, and connected with a galvanic battery. In a few minutes the finger was sensible to pricking. Here again occurred the phenomenon of transference of anæsthesia. The corresponding finger on the left hand was insensible to pain.

Another experiment was performed with this patient. A large horse-shoe magnet was applied to the right temple, a linen rag intervening. After the lapse of a short period, perhaps five minutes, she said she felt pain in the head. Soon afterwards M. Charcot applied his large pin to the right temple. There was no longer anæsthesia, but unquestionable indications of the application being painful. This return of feeling extended some distance, and would go on, I was informed, to about half way down the arm, if the magnet remained in apposition with the head. Contemporaneously

* Nothing has been observed by the ophthalmoscope in these cases beyond "slight anæmia of the retina."

with the above local return of sensation, there was anæsthesia over the left temple—pricking there with the pin causing no flinching or exhibition of discomfort.

In this case, before the magnet was applied, the left eye was closed, and the patient was requested to distinguish certain colours which were placed before her—red, violet, yellow, green, blue, &c.

She named red correctly, but in regard to all the others, she responded that they were white. The trial was repeated after the magnet had been applied to the temple as described. She then gradually acquired the power of distinguishing them, and in the following order—blue, green, yellow, violet. M. Charcot stated that he had observed the same order of returning perception of colours in other cases, both in and out of Salpêtrière.

In another experiment on this girl, the right hand was subjected to the influence of galvanism, having been previously demonstrated to be insensible to the prick of the pin. After a little while the feeling returned in the hand, and it was stated by M. Vigouroux that, with a stronger current, the whole arm would become sensitive. Along with this return of sensibility there was a transference of anæsthesia to the left hand.

The last experiment upon this case was with the electrifying machine. The application of electricity induced sensibility on the right side. There was, however, in this experiment, no transference of anæsthesia. I understood that the sensibility caused by the repeated use of the electrifying machine lasted a considerable time. In this experiment the power to distinguish colours by the right eye returned.

I was informed by M. Vigouroux that the metal which acts the most frequently in removing anæsthesia or increasing the temperature and producing other phenomena of metal is iron; then comes zinc, then copper, gold, silver, &c. So that, out of 100 persons subject to anæsthesia, 70 or 80 would be certainly found sensitive to the action in one way or other of iron; whilst the remaining 20 or 30 will be so in regard to one of the other metals. Many people are sensitive to two metals at once (as gold and zinc) and even more. Briefly, it may be stated, that it is alleged that the application of a certain metal upon a part affected with anæsthesia (1st), restores sensibility; (2nd) causes sensibility to disappear on the other side; (3rd), after the removal of the metal the sensibility remains for some time; (4th), lastly, it dis-

appears definitively. "En tous deux, les oscillations sont complètes."

Such were the experiments in regard to the alleged influence of metals, galvanism, the magnet, and electricity, in removing anæsthesia, followed by its transference to the other side of the body. I should add that two patients took chloroform subsequently, one of whom passed into a state of hystero-epilepsy, closely resembling the drawings M. Charcot has had made of patients in one of these fits. The other was excited and hysterical, but the epileptoid condition was not so marked. In both cases M. Charcot suddenly roused them to consciousness by pressure over the ovaries.

In my brief narration of the foregoing experiments, I have avoided, as much as possible, confounding the *post hoc* and the *propter hoc*. Whatever the terms employed may seem to convey, I wish simply to describe what I witnessed, and in so doing, bear my testimony to the succession of certain phenomena in these cases, in accordance with what M. Charcot has described in his interesting lectures. This is due to him. That these results admit of different explanations; that the facts are one thing and their *rationale* another, Charcot would be the first to admit. He has, in his lectures, referred to my work on the "Influence of the Mind upon the Body," and pointed out that, from the principles maintained in that book, such phenomena would be explained by the author as due to expectant attention. That which I should wish to maintain, in regard to these experiments at the Salpêtrière, is that, knowing how many phenomena are due to the influence of the imagination only, every possible test should be resorted to in order to ascertain how far a metal or the magnet exerts a real effect *per se*. I should think it presumptuous on my part positively to assert that the facts whose true nature is *sub judice*, are all certainly explicable by suggestion, attention, imagination, and so forth. M. Charcot assured me he had employed tests which precluded the possibility of such explanations, and that the uniformity of results in different subjects, unknown to each other, in and out of the Salpêtrière, and without any knowledge in the first instance of what was expected, puts such a solution of the problem out of court. Obviously before an independent observer and a stranger to the exact tests which have been employed, can form a positive opinion on this point, he must go through a series of carefully prepared experiments himself. My time in Paris did not allow of my doing this, though every opportunity was

most courteously offered by M. Charcot for a fuller and more frequent examination of the cases under his charge. Especially would one wish to see patients operated upon *for the first time*, and certainly *ignorant of previous experiments*. One man, indeed, I saw with hemiplegia and hemianæsthesia, who happened to come to the Salpêtrière for advice when I was there, but he was stupid, and it was difficult to be certain from his replies what the real facts were when the experiments were tried. Electro-magnetism *à distance*, however, removed the anæsthesia.*

With regard to the internal administration of metals, I did not obtain any definite information; and M. Charcot spoke guardedly on the subject. Indeed, on all points, he most fully admitted the necessity for caution, no less than the folly of an unreasonable scepticism. It cannot but be a satisfaction that a man of his profound knowledge of nervous diseases should have turned his attention to one of its most obscure forms; one so calculated to mislead the unwary physician, and tempt him into hasty generalizations. If, after all, the facts are found, when a series of rigorously-conducted experiments are tried in entirely fresh cases, to admit of a mental and not a metal explanation, they will have added a series of illustrations, by no means to be despised, of the "Influence of the Mind upon the Body." Believing, as I do, that M. Charcot's patients are not impostors, I am anxious that we should not fall into the mistake which has so often been committed before, in parallel instances, of denying the facts because we differ about their real character, and thereby miss the lesson (whatever that may be) which they teach when correctly explained by science.

It would be a great advantage, if a series of test experiments were published by M. Charcot showing the precautions which have been taken to prevent the fallacies arising out of mental influences.

Some months after writing the foregoing, I witnessed, through the kindness of M. Charcot, the same experiments at the Salpêtrière. I left with the same opinion: the great interest of these phenomena, however large a share in their causation may be due to the psycho-somatic element. Prejudiced as I naturally am in this direction, I feel that it is the more incumbent to be open to conviction, should facts determine an opposite conclusion. I also felt, as before, how

* This case has been reported in the "Gazette des Hospitaux," Mai 21, 1878.

desirable a series of test experiments would be. It is not easy with old subjects to devise such as are altogether satisfactory. Something one says, or does, or the manner in which one says or does a thing, may vitiate the experiment. Thus one experiment which I tried, and which I ought to mention, because so far as it goes it supports M. Charcot, was open to objection. In the case of one of the subjects, whose anæsthesia is removed by a metal plate being bound over the arm, I substituted a strong card as similar in size, &c., as possible, and when bound in the usual way on the arm, with various accompaniments calculated to work upon the expectant attention, I thought it possible that the ordinary result would follow—a transference of anæsthesia. This, however, was not the case. Nothing whatever happened. The same impression, however, may not have been produced upon the skin of the arm, and therefore the same expectation as that which the patient was accustomed to, may not have been excited.

So again in reversing the magnet, with the result that the patient no longer experiences certain sensations, it is difficult to be sure that she is not aware of some difference having been made in the conditions of the experiment. All this only points to the extreme liability of an investigator to unconsciously vitiate the value of any test he employs, and the proportionate care which is called for.

This necessity is confirmed by the effects which, in cases of hemianæsthesia, have followed the application of bone, &c., by Westphal, and of wood by Dr. H. Bennett. Justice, however, demands the admission that the influence of bone or of wood does not *necessarily* prove that metals do not exert an influence apart from the expectant attention aroused by their use; any more than the purgation or the sleep induced by a bread pill, proves that the jalap or the opium for which it was substituted possesses no virtue. It is possible to be misled into denying as well as admitting an alleged force.

On the occasion of this more recent visit to the Salpêtrière, I saw a case of hystero-epilepsy and hemianæsthesia (right side), in which an attack which came on after hypnotising her and pinching the skin on the side about the fifth intercostal space was immediately arrested by pressure on the right ovary, which was stated to be hyperæsthetic. In the attack, the patient, who was at that time in bed, became rigid, her head was thrown back, and soon after there were

spasms of various muscles, followed by violent movements. Subsequently psychical phenomena were well marked, the emotions of contempt and disgust, anger, and seraphic bliss. At one time there seemed a phase of apprehension and a consequent clinging to one of the physicians (M. Regnard) as her friend. When first hypnotised, it was easy to make the hands rigidly flexed by tickling the flexor muscles, as Braid produced the same effect long ago. The analgesia was complete. This patient and another were thrown into a cataleptic condition by making them gaze at a brilliant light in the darkened laboratory. This mode of employing Braidism did not, I think, occur to M. Braid, but it is merely an intenser form of his operation. The results are the same as those with which those accustomed to hypnotic experiments are familiar. The limbs could be placed in any position; there was analgæsia; and changing facial expressions indicating various emotions, the more striking being that which indicates some beatific vision. From this state the subject is easily wakened and as easily sent again into the hypnotic sleep by the action of the bright light. I have often seen a slight current of air, as in blowing on the face, instantly restore consciousness. Certainly nothing can exceed the beauty of the experiments which can be made upon the muscles of expression by means of hypnotism.

One subject was hypnotised by M. Charcot by means of looking at her for two or three minutes. While in this unconscious condition she sewed several stitches, and wrote some words of which after she was roused she knew nothing. I have often insisted on the importance of similar experiments to these in their bearing on the unconscious and automatic acts of epileptics. I have seen a young man when hypnotised walk under the influence of a dominant suggestion through the street for a considerable distance, enter a chemist's shop, demand some smelling salts (as ordered to do), and return with the bottle to the spot from which he was sent, without being conscious of what he had done when he was aroused, and yet no one who met him in the street would have suspected his abnormal mental condition. The bearing of induced hallucinations and illusions upon certain forms of insanity is also of the greatest interest, as I have pointed out in this Journal ("Artificial Insanity, especially in relation to Mental Pathology," July, 1865).

I should add to the foregoing the case of a *religieuse* who had been admitted at the Salpêtrière on account of tonic

spasm of the fingers and wrist of the left hand. No doubt the contraction was hysteric in character. The magnet was employed by M. Charcot in this case with the result that the contraction rapidly disappeared. But he was interested to observe that the enemy only changed his quarters. In short, there was a transference, for a time, of the rigidity from the right to the left hand, parallel to the transference of sensation with which other cases had made him so familiar. This artificial contraction was induced on the right side while I was at the Salpêtrière by placing the poles of a large horse-shoe magnet in proximity with the anterior surface of the forearm. It came on in about five minutes. The contraction would last all day, but the time was shortened by the application of galvanism by M. Vigouroux. In this case it is obvious that any application to a hysterical contraction of a joint might, however impotent in itself, be followed by relief. Further, it is equally easy to understand how the application of a magnet to the healthy arm should in this woman cause tonic spasm from expectant attention. The absence of any effect when the magnet is reversed, is apparently opposed to such explanation, but it is difficult to be satisfied that there is no moral influence at work in any one single instance, fair as it would be to admit the force of this experiment when applied with uniform results in a number of cases.

Westphal, who was at the Salpêtrière just after my first visit, on returning home in May, applied to the arm of a patient affected with hemianæsthesia a copper plate varnished on the surface in proximity to the skin. By evening there was no change. Next morning sensibility had returned on the whole anæsthetic side. At the end of May he applied a copper plate, covered in the same way, with sealing wax fastened so tightly round the arm that on the following morning it was very painful, and the arm œdematous. Sensibility had returned to most of the affected side. On the sound arm, a few hours after—the plate and bandage having been removed some time—it was found there was anæsthesia on the spot corresponding to the place on the other arm upon which the copper plate had been applied. To the same patient's anæsthetic arm were also applied counters of bone tightly fastened on. Four and a-half hours after, pain was felt under this spot, but the rest of the arm remained anæsthetic. This application being repeated for a whole night, sensibility returned over nearly the whole forearm. The hand was red

and swollen*. In some hours there was, with slight exceptions, a return of sensibility throughout the affected side. Prof. Westphal's assistant, Dr. Adamkiewicz, had, it should be stated, applied, in April, a mustard plaster to the arm of a patient with complete hemianæsthesia. In about two hours complete sensibility had returned to this part. Subsequently, with the same patient, the mustard plaster was applied at the same time and in the same place to both arms, they being alike anæsthetic. Only one arm (the right) became sensitive, whilst the other, in spite of the mustard, remained still anæsthetic. Hence the influence of the mustard in producing feeling prevailed on the right side, and it would seem that this influence, by the law of transference, neutralized the action of the mustard plaster on the left side.

In another case return of sensibility was induced by the same means, and this was followed by the phenomenon of transference.

In the "British Medical Journal," October 12, 1878, is reported a similar case, which was under the care of Dr. Inglis, Senior Assistant Physician to the Royal Edinburgh Asylum, and the same number contains notes of a case of hemianæsthesia treated by Dr. Hughes Bennett, with benefit in the first instance by metals, and subsequently with the same result by discs of wood.†

Of six cases of hemianæsthesia seen in London, I have observed the application of metals fail in two instances to produce any effect; in one, it was followed by return of sensibility. In two cases galvanism had a marked effect. In none was the phenomena of transference distinctly established. Several cases are now under observation.

In reply to the objections which suggest themselves to the theory of the direct action of metals, M. Vigouroux has been good enough to write me the following remarks on the recognition in the experiments made at the Salpêtrière, of the rôle which may be played by expectant attention in such phenomena:—

"I am much astonished, I confess," he says, "at the importance which you in England appear to attach to

* The effect of so tight a ligature complicates this experiment.

† The same number contains a full and graphic description by Prof. Gamgee of the cases seen by him at the Salpêtrière. See also *Idem*, Nov. 23, and *Brain*, Oct., 1878 (Dr. Bennett); case under Dr. Wilks, reported by Mr. Horrocks, "Brit. Med. Jour.," July 12, 1878; "On Hemianæsthesia of special and general sensation," by Dr. Allen Sturge, 1878; and "Neuropathologische Studien" (Hemianæsthesie), von Dr. Franz Müller, Graz, 1878.

this objection. It would be necessary to speak at length on this subject, but as I do not wish to exceed the limits of a letter, and as I treat the question in detail in an article which will appear shortly in the 'Revue Mensuelle,' I will confine myself to a few observations.

"The fact is that since the commencement of the experiments at the Salpêtrière, those who have made them have been fully alive to the probable influence of the imagination upon the results which have been obtained, and you will doubtless admit that the necessity for this caution did not require insisting upon. For myself, I took the precaution to read your work on the 'Influence of the Mind on the Body.' The first experiments were consequently surrounded by all the precautions required to eliminate this influence; eyes bandaged, substitution of one metal for another without the patient's knowledge; the use of inert materials, &c., &c. But it was soon seen that the difficulty did not lie there. Doubtless the first reports which were published, among others, the report to the 'Société de Biologie,' and the lecture of M. Charcot only slightly touched upon this aspect of the subject. Subsequently, rather from the practice of making rigorous experiments than from casting doubt upon what could not reasonably be doubted, it was never omitted to adopt all necessary precautions. Thus, if the magnet was employed, the poles and the neutral line were alternately applied. If piles were employed, they were used, sometimes with the circuit shut, at other times with it opened, as can be easily done without the patient's knowledge. Sometimes an accidental circumstance itself constituted a test, as when, for example, a wrong metal was used by mistake, as tin for zinc; or when in making use of some machine it was forgotten to fasten a screw. In all these cases, without any exception, we have observed that certain phenomena followed positive experiments, and not others. So in matters of detail, the application of different metals has been observed to change the course of the phenomena.

"I do not speak of the tests which foreign physicians have been permitted, in all liberty, to use at the Salpêtrière. You yourself, if I am not mistaken, applied inert substances, in order to test the influence of the mind.

"It would be easy, you will understand, indefinitely to enlarge upon the scientific precautions which have been taken. I content myself for the present in proving that expectant attention has been sufficiently allowed for, and I

pass on to an argument perhaps still stronger for those physicians who *à priori* deny that our conclusions are legitimate. The experiments were made, in the first instance, upon certain women at the Salpêtrière, who, since then, have continued to appear at the public demonstrations; but outside the Salpêtrière, and in non-hysterical cases, experiments have been daily repeated for more than two years on an enormous number of patients of both sexes in ordinary practice, and in the most opposite conditions. Nothing was more striking than to hear from persons absolutely ignorant of the new means with which one experimented upon them, that they, under the same conditions, experienced the same sensations as the patients at the Salpêtrière, and employed the same terms to characterise them. From all these observations has resulted a body of doctrine as regular and as well defined as is found in any other part of physiology. Nor can one conceive this universal consensus of the imagination which establishes an *ensemble* of laws and the maintenance of the most vigorous methods of investigation; for not only the results once established are invariable for the same patient, but the series of phenomena is the same for all. Are these the characteristics of the imagination?

“My limits do not allow of my speaking of the curative effects obtained in some cases of organic lesion with subjects in whom the element of emotion was at a minimum.

“I cannot better explain our attitude of mind on this subject than by repeating what M. Charcot said to me the other day—‘It is truly astonishing that the imagination of our patients has given us so little cause for embarrassment.’

“In conclusion, this is the question. The effects attributed to the metallic applications and to similar agents, the magnet, electricity, &c., are they due to the fact that the attention of the patient is directed to a part of his body, as it would be by a particular operation, and to the previous knowledge of these effects? or rather, are they the direct results of the application of these agents, and are they united by certain laws to the physical conditions of the operation? I declare the former hypothesis to be absolutely untenable, and the latter abundantly proved by facts.”

One thing is certainly clearly established, no less by the experiments of M. Charcot than by those of Westphal and others, that various applications besides metals remove anæsthesia and induce transference to the other side.

It is important not to allow any difference of opinion as

to the *rationale* of these phenomena to divert our attention from their great interest quite apart from metalloscopy. M. Charcot has brought under the notice of the profession the clinical facts of hystero-epilepsy, hemianæsthesia, and allied phenomena, in a way which no one else has done, and his good work will remain, whatever becomes of metalloscopy. Further, the courageous manner in which he is now employing hypnotism at the Salpêtrière can hardly fail not only to confirm, as it has done already, the results arrived at by Mr. Braid, but greatly to extend them.

There are those who think that because these lines of enquiry offer a tempting field for imposture they should not be pursued, and who, as regards hysteria, adopt for their text "Touch not pitch, lest thou be defiled thereby." There are others who believe it is more essential here than anywhere else to apply methodical scientific research and legitimate medical enquiry. To the latter class belongs, fortunately for medical science, the distinguished physician of the Salpêtrière, M. Charcot.

CLINICAL NOTES AND CASES.

CASE I.

Insanity in a Boy following Injury to the Head. By G. H. SAVAGE, M.D., Lond.*

Edward, J., schoolboy, 14 years. Mother insane thrice after delivery, including the birth of this boy.

The boy had been healthy and bright, though small. He had had no severe illnesses. Four months before admission he received a severe blow on his head. He was only insensible for a very short time. Two days after the injury he became dull and moody, then slowly changed and became noisy, boisterous, and violent, throwing things about in a wild way. He kicked and bit those about him. This attack lasted nearly a month, and then he became dull again, and for a few days his friends thought he was getting well, when again he became maniacal. During the four months before admission he had three or four distinct attacks of mania with intervals of a few days of quiet. In the attack preceding admission he was much more violent, and could not be managed at home. He chattered incessantly, talking nonsense; he would not dress himself, tore up his clothes, struck his mother, and tried to escape from the house in a state of nudity. He was dirty in his habits, refused food, and was sleepless.

* Read at Quarterly Meeting. See Notes and News.

On admission he was thin and delicate-looking, noisy, restless, and destructive. He complained of pain in his head, over the region of the blow.

Ten days after admission he became more quiet and tidy, amused himself with cricket and reading.

From this time he rapidly improved, and was discharged within two months of his entrance to the Hospital, apparently as well as ever, with no mental loss of any kind.

In this case we have a strong inherited taint, and a patient who will probably break down again from other causes. But the insanity following so soon after the blow, I think one is justified in considering it the cause of this attack. The form of insanity following a blow may be of almost any kind, and it seems to depend to a great extent on whether it is the real cause or only the exciting cause, as in this instance. In the former the prospect of recovery is not nearly so good as in the latter.

This case, again, is of interest from the recovery occurring so rapidly in a young case.

One, of course, looks upon all attacks of insanity in very young persons as unfavourable, and the number of cases of weakmindedness produced by injury to the head in early life is well known. Taking the whole circumstances, I think the case worthy of record.

CASE II.

Insanity following Marriage.

Frederick H., married, 26, a constable. Family history very good; both parents living, and all his brothers and sisters healthy. He had been very sober, industrious, and well-behaved. He is a very powerfully-built man, of six feet in height. He had no shocks, injuries to the head, or cause for anxiety. He had been married five weeks.

Two days before admission he became restless and suspicious at night. He heard voices, and thought they doubted if he were married, and took his marriage certificate to the police-station to show to people.

He became violent, fancied thieves were in the house, and rushed up and down stairs after them, and attempted to jump out of window. He accused his wife and his brother of stealing and receiving stolen property.

He stripped himself naked. He said himself he could not sleep in consequence of the noise made by electric batteries.

On admission he was physically weak, unsteady in his gait, had some hesitation in his speech; widely dilated pupils, a soft, sweating skin, and compressible pulse. He was restless and suspicious, full of

ideas that he or his were accused of theft. He had hallucinations of hearing and almost certainly of sight. He still fancied the batteries were at work in his bedroom.

He was allowed to spend most of his time out of doors, in the airing court, and had nourishing diet. He gradually became more calm, ate well, and slept better, but his delusions persisted, and the tremulousness of his facial muscles was still well marked.

A month after admission he was losing some of his delusions, and was employed in the gardens.

He was anxious to get home, but his desires were very strongly sexual.

He was discharged on leave six weeks after his admission, and is keeping well, and was finally discharged.

There are several points of interest in his case.

We more often see cases following marriage in the male sex, though I have seen at least one follow marriage in a woman; and we have a still more remarkable case in Bethlem, with the history that she is the third wife of one man who all became insane after marriage. The case under observation was markedly one of great exhaustion, and had the symptoms of unstable nervous equilibrium, such as are seen in so many sexual cases, such as cases of masturbation and the like.

At least, in early cases of exhaustion hallucinations are very common.

Cases following marriage have occurred to me in three distinct forms, the most common such as the one above narrated—cases of great exhaustion, with restless suspicion, generally very sleepless and violent.

Others—and we have one now under observation—were on the borderland of insanity before marriage, and the extra excitement rapidly produced insanity; and, thirdly, cases in which some physical cause prevented consummation. In this latter case we get delusional insanity, hypochondriacal melancholy, and in one case epilepsy. The prognosis is best, of course, in the first class of cases, but they are cases that one fears for the ultimate result with return to home life.

Dr. Maudsley is a great supporter of the idea that sexual excess is the chief factor in general paralysis, and the similarity of the symptoms is very striking; but this can also be said of alcohol with equal truth, and though I am quite in agreement with Dr. Maudsley that some cases of general paralysis are due to sexual excess, I would not put down a majority of those I have seen to that cause.

CASE III.

Case of Aneurism of the Left Middle Cerebral Artery bursting into the Lateral Ventricle. By J. CUNINGHAM RUSSEL, M.B.

R. B., said to be 72 years of age, a widower, and, by occupation, a miller, was admitted on the 4th April last. The duration of his illness was stated to have been one week, but no particulars of his previous history were obtainable. He was a man of middle size, spare and decrepit. His pulse and respiration feeble, and his gait uncertain and tottering, but no particular paralysis was observed. He was quite blind from a dense cataract in each eye. He articulated fairly well, and modulated his voice, so as to give a semblance of meaning to his speech, but, when listened to, it was found to be nothing but a jabber, in which no intelligible word could be caught, and he did not appear to understand what was said to him. He took food fairly. He was restless, and inclined to wander about, but at night, in a room by himself, he rested and slept well.

There was no change in his condition till the night of the 6th, about 10 o'clock, when he was observed by the night attendant to be breathing badly. He was then seen by me, and found to be quite unconscious and incapable of being roused, his face pale, his breathing slow, shallow and feeble, with puffing of the cheeks, but no stertor, and his pulse frequent but very feeble, so as not to be countable. All his limbs appeared to be quite paralysed, and he could only swallow a little liquid with difficulty. Next day there was little change, except that while the right arm appeared to be totally paralysed, the left did not drop as suddenly when raised and let fall.

In the evening he opened his eyes, slightly moved his body, and when spoken to loudly seemed to hear.

He grew worse during the night, and died at 2.30 a.m. next morning.

The following are the particulars of the autopsy, made about 12 hours after death:—

The dura mater was firmly adherent to the calvaria. A thin black clot of blood overspread the whole base of the brain, beneath the arachnoid, stretching some distance up the sides, and, in the sulci, reaching even to the upper surface of the hemispheres, completely obscuring the structures over which it lay. This blood had evidently escaped from the ventricles, which were all filled with similar soft black clots; the third and fourth with the communicating passage as well as the lateral ventricles. In the left lateral ventricle, but not in the others, the brain substance forming the parietes, was softened, broken down, and mixed with the clot. From this ventricle the clot was traced forwards through the wall in the region of the Island of Reil, and was seen to be continuous with the contents of an aneurism of the middle cerebral artery, through a rent in its wall.

The dimensions of this aneurism were nine-tenths of an inch long,

seven-tenths broad, and the same deep. On a cursory view it appeared very nearly globular, and, probably, before the rent, which was at one of its poles, took place, it even more nearly approached that shape. Its situation was in the Sylvian fissure, at that part of the artery where it breaks up into its large branches. Here the artery runs obliquely, but supposing it, for the sake of simplicity, to run vertically upwards, and to be viewed from the side of the brain, the relations of the aneurism to it and its branches would be as follows: The trunk of the artery entered the aneurism abruptly, and without any previous dilatation, a little to the (spectator's) right of the lower pole, and towards the cerebral surface. The first branch was given off to the right, issuing from the aneurism, about one-third of the distance up that side, and the second branch, which seemed to be the continuation of the trunk, sprang from the aneurism about the same distance to the left of its lower pole. This branch had to make a bend to gain its proper course, from which, at its origin, it deviated considerably, by reason of its springing from the shoulder of the aneurism; it then broke up into smaller branches. No branch but these two was given off from the aneurism, so that, at least, two-thirds of the tumour projected clear from the direction of any vessel, indicating its true saccular character. The aneurism thus implicated about two-tenths of an inch of the artery before it gives off its first large branch, the same distance after, and a part of the first branch itself. The opening, a transverse rent about one-third of an inch long, was situate near the upper pole of the aneurism, and was partly blocked up with hard fibrinous clots, with which the tumour was filled. An injection passed freely through the aneurism, from the trunk of the artery to the branches, and was found on section, after hardening, to occupy a cavity in the centre of the fibrinous clot. The wall of the aneurism was about one-twentieth in. thick where the artery entered it, and thinned gradually to the point where the rent was. A section of the thick part under the microscope showed hypertrophy of the middle and outer coats, with strong fibrillation of the former, and deposits of granular matter and fat between the coats and between the bundles of fibres of the middle coat.

The vessels of the brain generally were atheromatous, the aorta slightly so, and the heart hypertrophied, weighing $12\frac{1}{2}$ oz.

This case exhibits two somewhat rare, though not unknown conditions: the occurrence of a large sacculated aneurism on an intercranial vessel, and the bursting of such a tumour into the ventricle.

As regards the symptoms, it is, of course, obvious that the sudden paralysis was due to the rupture of the aneurism, and consequent effusion of blood, but it is not quite so clear whether the presence of the tumour had much to do with the previous mental disturbance and peculiar aphasia. Looking,

however, to its size and situation, one might fairly suppose that either by pressure or interference with blood supply, or, perhaps, by slight hæmorrhage, it may have had some share in the production of these symptoms.

CASE IV.

Syphilitic Disease of the Cerebral Arteries, with Aneurisms and Aneurismal Dilatations.

J. S., said to be 51 years of age, married, and a sailor by trade, was admitted on the 11th July, 1877. He was a tall and large-framed man, in fair condition, but looking at least ten years older than the age stated. He showed distinct symptoms of general paralysis in his walk, which was uncertain and shuffling, and much more in his speech, from tremor and immobility of the lips, which he seemed unable either to close firmly or to open freely. His memory was much impaired; he gave many different statements of his age, and could not supply any connected account of his life. He was quiet and cheerful, and, though he did not exhibit any well-marked delusions, he had rather an exalted notion of his own condition, especially of his ability as a seaman, and maintained that he was quite well, and able to go to sea at any time.

There was no change in his condition till a few days before Dec. 13, when he began to complain of a pain in his head, which he referred to a spot above the left eyebrow. On the morning of that day his right arm and leg, and the right side of his face were observed to be paralysed; he could move both the limbs, but he could not stand, nor could he grasp with the hand. There was no aphasia, but his speech was indistinct, from paralysis of the lips and tongue. The distortion of his face was well marked. On the evening of the 14th the arm was totally powerless, the leg remaining as before. The sensibility of the paralysed limbs was not affected; reflex action was exalted in both legs, and about equal in both. The right pupil afterwards became somewhat dilated. On the 28th the power of the paralysed muscles of the limbs and face was gradually returning, but still far from being completely restored.

He continued to improve till the 21st Jan., when he had a convulsive fit of short duration, after which the left arm was powerless for a short time only. Next day the face, which had previously been drawn to the left, was less distorted than it was before the fit, owing to paralysis of the muscles of the left side, the lips in particular being so paralysed that he could scarcely articulate, or retain liquid food in his mouth till he swallowed it. There was also, probably, aphasia, as he seemed to search for words that he wanted, and accepted them gratefully when supplied, indeed, he made great efforts to explain that he could not find words to express himself. His intellect appeared to be as clear as before. None of the limbs were quite paralysed, but all

partially so, and about equal on the two sides, his grasp being very feeble, and the strength of his legs quite insufficient to support him. He continued, without alleviation of the paralysis, till 22nd March, when he died with symptoms of pulmonary œdema. At the autopsy exaggerated changes were found in the larger vessels of the brain, of which the following are the details. The vertebral and basilar arteries, from the entrance of the former into the spinal canal, to the termination of the latter, were greatly increased in size throughout, and very tortuous, but at several points the dilatation was exaggerated so as to become aneurismal. Near the entrance of the left vertebral was a dilatation measuring 1·1 inch in circumference, then the artery bent sharply to the left with a circumference of 0·75 in. It next returned, with an equally sharp bend, to a point short of the middle line, to join its fellow, having at that bend a flattened dilatation, 1·4 in. in circumference, 0·7 in breadth, and 0·5 in. depth. The right vertebral, having a nearly uniform circumference of 0·75 in., curved to the left, crossing the middle line to join the other.

The basilar, at its origin, had a circumference of 1·4 in., it then narrowed to 0·85 in., again dilated, with a projecting pouch on its right side, to 1·25 in. circumference, and, finally, narrowed somewhat before its division. It lay, for the most of its course, to the right of the middle line, curving across from the left at its origin, and towards the middle line at its termination. The left carotid, and the left anterior and middle cerebral, near their origin, each measured 1 inch in circumference. The branches of the left middle cerebral, and both the anterior cerebral, beyond the communicating branch, were also dilated. There was a globular aneurism, nearly as large as a pea, on the right anterior cerebral, about half-way back over the corpus callosum, and another small globular aneurism on a branch of the left middle cerebral in the Sylvian fissure. All the arteries and aneurisms mentioned had a white opaque aspect; they were full and round, as if distended with injection, and felt hard and solid to the touch. When cut open they were found to be filled, apparently completely, with hard, white, fibrinous deposit, but in some parts, especially the smaller branches, either wholly or in part with red clots.

The walls of the arteries were greatly, but irregularly thickened. Sections were made from the middle cerebral. The thickness of the wall varied from one-tenth to one-twentieth of an inch, and the lumen of the vessel was about seven hundredths of an inch. Under the microscope the sections showed an appearance exactly corresponding to the syphilitic changes described by Heubner, the vascular coats being infiltrated with the small, nucleated, round and fusiform cells of that condition. Besides those lesions there was, at the posterior end of the left superior temporal convolution a spot about an inch in diameter, round the margins of which the dura mater was adherent to the brain substance, while in the central part a thin layer of pus-like lymph was interposed.

The aorta was atheromatous, and the heart enlarged, weighing $11\frac{1}{2}$ oz.

This case appears to be a good example of syphilitic change in the cerebral vessels, accompanied, as it is said generally to be, with symptoms similar to those of certain forms of general paralysis.

CASE V.

Similar to the Preceding.

W. J., a man aged 30 years, married, and a carter by trade, was admitted 2nd Feb., 1877. He was of small spare frame, and bilious temperament. He had ptosis of the left eyelid, and the pupil of the same eye was contracted and immobile; no other paralysis was observable. Mentally, he was in an extremely excited state, restless and noisy, shouting, weeping, fighting, tearing clothes, and breaking windows, and his conversation was disconnected and meaningless. He went on, with little change, till the 3rd of April, on the evening of which day he was observed to be paralysed, and unable to stand. On examination the right arm and leg were found to be quite powerless, distortion of the face was not marked, but he was scarcely able to swallow. He soon fell into a lethargic, but not comatose condition, in which he remained with but little change, till he died on the 6th of April.

At the autopsy the dura mater, arachnoid, and pia mater, were found adherent to each other, and to the brain substance in the left parietal region, so that when the membranes were removed some of the gray matter was torn away. There was a dilatation of the basilar artery for nearly an inch of its length, having in its course three rounded projections to the right side, at the most prominent of which the artery measured eight-tenths of an inch in circumference. On section the artery appeared to be nearly occluded by thickening of the walls and deposit of fibre, and the projections were principally caused by an excessive thickening of the wall. Microscopic sections taken through one of these places, where the wall was nearly one-fifth in. in thickness, showed syphilitic changes even more marked than in the previous case, the small nucleated cells appearing to constitute nearly the whole wall. There was an aneurism about the size of a pea, and having thick tough walls just at the division of the left carotid artery, and also three or four small aneurisms on the left middle cerebral and its branches. These had probably the same structure as the first-mentioned, but were not examined microscopically. In the substance of the left optic thalamus there was a spot the size of a pea extremely softened, so that when sections of the thalamus were made, the softened matter came out on the knife, and left a clean round hole.

This case is similar to the preceding, as regards the nature of the arterial lesion, and the occurrence of sudden hemi-

plegia; it differs from it in the presence of cortical adhesions, and in the character of the mental affection during the period before the paralysis.

Rupture of a Basilar Artery, &c., in a Case of Syphilitic Insanity. By Dr. M. D. MACLEOD.*

The subject was a female, aged 47, who had an attack of syphilis three years before her admission in July last. She laboured under great depression, irritability, suspicion, and delusions that people plotted against her, that she was to be hanged, &c. She was thin and anæmic. Had slight ptosis of the right eyelid. For the first six weeks treatment was unsuccessful in her case. During September she had a transient attack of paralysis of the left hand and arm. Latterly she improved both in her mental and bodily states under the use of potassium iodide and quinine and iron. She had a sudden and very severe attack of apoplexy on the morning of the 11th November, from which she never regained consciousness, but died on the same evening.

Post-Mortem Appearances.—The skull cap was very hard. There was a small exostosis on the petrous portion of the left temporal bone. The vessels of the membranes were engorged with dark blood. A large effusion (8 to 10 ounces) of blood had taken place over the base of the brain, chiefly over the pons Varolii. The arteries of the base were very atheromatous, and a small opening was found in the basilar artery, near its termination, from which the blood had flowed. There was a small aneurism on the right middle cerebral artery. The smaller vessels in the substance of the brain were dilated and full of dark clot. The brain substance was firm and dark in colour. The other organs were apparently healthy. The Spleen was multiple, there being three such organs, each having its proper complement of vessels, which sprung from and united into a common trunk.

Embolism of the Cerebral Arteries—Softening of the Pons Varolii. By HENRY CLARKE, L.R.C.P., Surgeon to H.M. Prison, Wakefield.

Elizabeth W., æt. 35, married, three children, one living, two dead, one at four months old, from "fits," the other at six months, from "water on the brain." No miscarriages. Patient states that she never had a day's illness in her life. She was committed to prison Dec. 31, 1877, and up till the commencement of her present illness, has been

* Specimens exhibited at Edin. Quarterly Meeting—See Notes and News.

quite well, except that for the last few weeks she has suffered from a constant pain at the back of her neck. On February 20th, 1878, about 11.30 a.m., while sitting in her cell picking oakum, she felt a sudden numbness in the right hand and arm, and almost directly afterwards found that she was unable to speak, or move the right arm or leg. There was no loss of consciousness. She was seen within ten minutes of the attack, and had then partly recovered her speech, but still spoke thickly and indistinctly. Had regained power in the leg, but only partially in the arm. Sent to hospital.

Feb. 21st.—Has left facial paralysis. Complains of her right arm being still weak, but can grasp with it as well as with the left. Has completely regained her speech, and slept well during the night. Appetite good. Careful examination failed to detect any nodes, scars, or other evidences of syphilis; and no specific history could be gained by questioning the patient. Chest examined and found perfectly healthy, heart sounds being clear and distinct. Temp. 98·4, P. 90.

Feb. 22nd.—This morning had a second attack of right hemiplegia and aphasia, without loss of consciousness. It lasted only a few minutes, but the right arm still (midday) remains weak.

Feb. 23rd.—Had considerable sickness during the night, but brought up only a little watery fluid, mixed with the contents of the stomach. Is now lying quite helpless. Has paralysis of limbs on both sides, complete on the right, partial on the left. Reflex action can only be excited by a very deep prick, and then the movement is but slight. Mumbles inarticulate noises when spoken to, but occasionally and with difficulty can make herself understood. No loss of consciousness. Took her food well up till this morning, but refused her breakfast. Squints naturally, but pupils are now equal and of ordinary size. Passes her water in bed. Left side of face still continues paralyzed.

Feb. 24th.—Slept well last night; has ceased to wet her bed, and can turn and move about again without assistance. Has, to a great extent, regained power in right arm and leg. Can hold left arm up, but has no power of grasping with the hand. Can flex the left leg slightly, and talk so as to be understood. To avoid repetition, it may be stated here that the temperature and pulse were taken constantly throughout the case, and that the former varied—except where specially mentioned—only between 98·0 and 98·4 Fahr., and the latter between 90 and 95.

Feb. 27th.—Had no sleep, and was very restless all night. To-day she is quite helpless again, cannot sit in bed without being held up, or turn on her side without assistance. Talks very thickly and indistinctly, saliva runs from her mouth in considerable quantities, but she can swallow her food well. Passed everything under her during the night. Has complete paralysis on right side, and very nearly so on the left. Can protrude her tongue only slightly, and apparently with great difficulty. Right pupil is slightly smaller than left.

Feb. 28th.—Had little or no sleep during the night, but kept up a constant loud groaning, or querulous crying noise. Has completely lost all power of speech; is quite sensible, and nods her head when questioned. Both sides of the body are completely paralyzed, there is considerable rigidity of the right arm, and to a less extent of the left. Cutaneous sensibility does not appear to be diminished anywhere. Breathing is stertorous. Cannot protrude her tongue at all. Right pupil still remains contracted. Can see and hear perfectly well. Can swallow, but apparently with some little difficulty, as she allows the milk to remain in her mouth a short time before making the attempt. Has taken much less food since last report.

March 1st.—Remains in same condition as yesterday, was very noisy and restless all night. Face looks puffy and swollen, especially on the right side.

March 2nd.—Has lost all power of swallowing, and has to be fed by nutrient enemata. Is quite conscious and sensible. Stertorous breathing continues. Right pupil considerably more contracted.

March 3rd.—Was quiet, and slept comfortably the greater part of the night. Has regained her power of swallowing. Made signs for and used the bed pan, but still passes part of her water under her. Can protrude her tongue slightly again. Right pupil even more contracted than it was yesterday.

March 5th.—Very restless all night, keeping up a constant querulous cry, and continually wanting to be turned in bed. All the other conditions remain as before.

March 6th.—Complains, by signs, of pain in her head, which cannot be localized. Makes no attempt at all to speak. Passes everything under her again. Has considerable diarrhœa. Temp. 97.3.

March 10th.—Diarrhœa has ceased. Opens her mouth, and makes an attempt, when asked, to put out her tongue, but cannot protrude it at all.

March 11th.—Cutaneous sensibility much diminished in all the limbs, and equally on both sides of the body.

March 14th.—Can protrude her tongue a little to-day. Takes her food well. There is considerable rigidity of both arms and legs.

March 15th.—Face looks much brighter. Can flex her legs a little, but has no power over her arms. Opens her mouth and tries to speak, making a somewhat inarticulate noise which can be understood to be meant for "no." Pupils are more equal, but both contracted.

March 16th.—Can flex both legs without much difficulty, arms still quite powerless. Facial paralysis less marked. Can say "yes" and "no" fairly distinctly.

March 17th.—Last night she had two "fits," described by the nurse as having the following character:—The eyes were fixed and staring; the limbs extended and rigid, the legs completely, the arms only partially. Patient appeared to be quite unconscious. Mouth worked with an upward and downward movement. No unilateral

twitching or convulsion; was quiet while it lasted, and breathing did not seem to be affected. The first "fit" lasted from 2.30 a.m. to 4 a.m., and the second, later on, only for a few minutes. This morning there is no alteration in the general symptoms. Temp. 97.6.

March 18th.—During the whole of last night she is said to have had a continuous succession of "fits" of the character described yesterday, lasting only a few minutes each, and with very short intervals between. This morning she seems to have lost ground again; is much less bright, and makes no attempt to speak.

March 19th.—Was exceedingly noisy and troublesome during the night, but had no recurrence of the "fits."

March 20th.—Rigidity of limbs is considerably lessened. Pupils are nearly equal, opens her mouth when asked, and makes an ineffectual attempt to protrude her tongue.

March 22nd.—Has regained partial power over her legs. Can extend left arm easily, but cannot flex it. There is a perceptible movement in the right arm when she tries to extend it. Can protrude her tongue well beyond her teeth. Does not wet her bed so frequently.

March 26th.—Has wonderfully improved since last report. Can talk now, thickly, but so as to be understood. Has been talking and laughing all day for pleasure at her regained power. Can protrude her tongue very easily to its full extent. Facial paralysis is only just faintly recognisable. Stertorous breathing has disappeared. Power over the limbs remains as before, except that she can flex her right arm now as it lies on her chest, but cannot move it from her side.

March 29th.—Is not so well again. Managed to say "yes" and "no" early this morning, but has now entirely lost her power of speaking again, is very noisy and troublesome, and passes everything under her. Has only a very limited power of movement over her arms.

March 31st.—Has again regained her lost ground, and is now in the same condition as described on the 26th inst.

April 9th.—No variation in the symptoms since last report—except, that she has been very noisy and restless at night, and latterly has been sweating very freely—until to-day. She took her breakfast this morning, when she appeared to be as usual, but has since rapidly changed for the worse. She is now—12 noon—lying on her right side, with slightly stertorous breathing. Did not appear to recognise her husband, who came to see her. Can be roused with difficulty, but has lost all power of speech. Both pupils very contracted, but the left more so than the right. Conjunctiva only slightly sensitive. Complete paralysis of both arms and legs. Rigidity has entirely disappeared, and reflex action quite gone.

April 10th.—Improved a little yesterday evening, took her supper, and commenced her usual noisy cry. About 9 p.m. she became quiet, passed into a state of coma, and died at 6.15 this morning.

The post-mortem was held the same afternoon, and the following is a brief description of the morbid appearances:—

Brain. Weight $41\frac{1}{2}$ oz. The arachnoid generally thickened and opaque; considerable injection of the smaller blood vessels on both sides over the posterior half, but more especially on the right. The cut surface of the white matter full of dark points—*puncta cruenta*—the injection being distinctly more marked over the posterior half of the right side, the basilar artery was plugged through the greater part of its length, the clot being free and softening down at its distal extremity, firmly adherent to the walls of the vessel by its proximal. The right communicating artery was quite impervious, being converted into a fibrous cord. The right Sylvian artery was plugged at its commencement. The corresponding arteries on the left side and the other vessels at the base of the brain were free. No atheromatous or other deposit could be detected in any of the arteries of the brain. The grey substance appeared everywhere healthy, and several portions from different localities, examined under the microscope, showed no structural change. The ganglia at the base of the brain were healthy. The greatest alteration was found in the pons varolii, a considerable portion of the centre of which, but more on the right side than on the left, was soft and almost diffuent; both in its general look and microscopic appearances, showing all the characteristics of acute red softening. The medulla was healthy.

The skull was of ordinary thickness and consistency. There were no nodes, but the grooves for the vessels appeared a little deeper than usual.

Chest. Few old pleuritic adhesions on both sides; bases and edges of both lungs emphysematous. Lower lobe of right in an early stage of pneumonia. In the upper lobe of the right lung, and in the lower lobe of the left, were two small pneumonic patches of a wedge-shaped form, with their bases towards the surface, and clearly of embolic origin. Lungs otherwise healthy, but congested.

Heart. Weight 8 oz. Small; a small quantity of soft P. M. clot in right ventricle, valves perfectly healthy, muscular substance healthy; pericardium healthy, excess of fat on exterior. Aorta healthy, smooth and elastic. Larynx healthy. Considerable quantity of thick mucoid secretion in larynx and bronchial tubes. Main divisions of bronchi injected.

Liver. Weight $50\frac{1}{2}$ oz. Large, smooth, bulky, mottled on the surface, fatty on section.

Kidneys. Weight 10 oz. Slight thickening and adhesion of portions of the capsules, but organs healthy on section.

Spleen. Weight $8\frac{1}{2}$ oz. Large, firm, congested.

Uterus. Bulky. Injection and abrasion of mucous membrane at fundus. Quantity of old firm adhesions connecting the right side of uterus with corresponding fallopian tube. Considerable sized cysts in both ovaries.

Remarks.—Apart from the interest due to nervous affections generally, when occurring among criminals, the above case was thought to be worth recording, as a good example of a not very common form of cerebral disease. There was some little doubt at one time in the minds of those who saw the woman during life, as to the exact diagnosis. The first onset of paralysis without loss of consciousness, the interval between the hemiplegia and the facial palsy, the somewhat random association of symptoms, and the marked improvement under treatment, lent some degree of plausibility to the view that the case might be one of syphilitic disease of the vessels. But taken in its entirety, there could be no doubt of the existence of a gross lesion of the pons. The most interesting points—in addition to the ordinary paralytic symptoms—being the excessive flow of saliva, the early occurrence of rigidity, and the marked emotional incontinence, a crying querulous manner, lasting for several days, giving place to what might almost be called playfulness, and a readiness to laugh at the slightest thing—symptoms which have been more than once described as significant of disease of this part of the brain. It is much to be regretted that the woman's eyes were not examined during life with the ophthalmoscope, as the fact of her vision being good when tested, as it was, in the ordinary way, did not necessarily preclude the possibility of the existence of optic neuritis. Under the first impression that the disease might be syphilitic, iodide of potassium was given in gradually increasing doses, and the improvement at one time was certainly very remarkable, the reason of it is not quite so clear. The cause of the clotting in the vessels was also left in doubt, the heart being perfectly healthy, and the cerebral arteries free from atheroma. In the absence of cardiac disease, the case is analogous to two others referred to by Dr. Dreschfield, in "The Medical Times and Gazette," for May 1878. The first is related by Dr. Ogle, in the "Pathological Transactions," Vol. xii., 1860. His patient was a man *æt.* 40, who fell in the street in a fit, and was brought to the hospital suffering from facial paralysis and left hemiplegia. The P. M. showed softening of the pons, and total occlusion of one of the cerebellar arteries. The basilar artery was atheromatous; heart valves free. The second case is recorded by Darolles ("Bul. de la Soc. Anat. de Paris," 1875). There was softening of the right half of the pons due to obliteration of the basilar artery in a patient *æt.* 38, heart valves being normal.

OCCASIONAL NOTES OF THE QUARTER.

Hypodermic Injection of Morphia.

Several correspondents have communicated to us their experience of the subcutaneous injection of morphia (see "Notes on Lunacy in France," in the October number of the Journal). We invite further communications on this important subject; and especially cases in which large doses have been administered, whether to the sane or insane.

Dr. T. B. Worthington, Senior Assistant Medical Officer, Sussex County Asylum, writes:—

In reference to a conversation I had with you about the amount of morphia I had seen given subcutaneously, I now write to say that I have since ascertained from perfectly reliable sources that the greatest amount given in twenty-four hours was 14 grains, and that in the week, of which that was one day, 85 grains were administered. The patient had cancer of the uterus, and I do not think I ever saw any one suffer such acute pain as she did, and it was in the attempt to alleviate her agonies that the dose was increased to such proportions. A peculiar coincidence is that she was a French woman by birth, but had lived many years in England. The only unpleasant constitutional symptom from which the patient suffered was obstinate constipation. There was never any nausea or vomiting. The seat of the injection was the outer side of the upper arm and shoulder; the leg was once tried, but it caused great pain and twitching in the limb. The preparation of morphia used was the acetate; the reason it was chosen being that it is so much more soluble than the hydro-chlorate, their relative solubility being acetate 1 in 6, and the hydro-chlorate 1 in 20.

To D. H. Tuke, M.D.

T. B. WORTHINGTON, M.B.

Dr. McIntosh, the Superintendent of the Perth District Asylum, writes:—

The statement made seventeen years ago in advocacy of the restricted use of the injection of acetate of morphia in every asylum as one of the "most effective opiates, as calnative to the depressed and despairing," and the expression of its great value "where restlessness, excitement, and dirty habits occur at paroxysmal periods," can now be endorsed and extended by ample experience.

The largest dose administered was $\mathfrak{m}\text{xvii}$ of the following solution:*

Morph. acet., gr. x

Acid. acet. glac. q. s.

Aqua. $\mathfrak{z}\text{ij}$.

(A few minims of liq. potassæ are added, so as to render the fluid nearly neutral.)

* "Journal of Mental Science," 1860. It gives about gr. j in $\mathfrak{m}\text{xv}$.

I have not, however, given so large a dose (℥xvii) for many years, since by attention to collateral circumstances such is not necessary. I never inject more than once a day, and would not recommend any other procedure. Tinct. Canabis Indicæ is generally used to supplement the initiatory smaller doses, the first being almost invariably ℥iij, so as to avoid any possible accident from idiosyncrasy or otherwise. After an interval it is also well to reduce the dose (if it has been large) and the same with a fresh solution.

One of the most singular features is the fact that since the somewhat interesting case of narcotism (followed, however, by both mental and physical recovery), which occurred in Murray's Asylum in 1861,* after a comparatively brief essay amongst the patients of Dr. L. Lindsay, who kindly permitted the experiments, not a single instance of the kind has happened in the much larger area to which the method has been extended since the opening of this asylum early in 1864. Thus the dread of this little operation, which for one reason or other still lingers in the minds of a few, may surely be disposed of.

The drug has been administered almost daily for a month or two, and in several cases at the same time; and its effects have, further, been carefully compared with many other remedies and methods of treatment. Moreover, the favourable results obtained have been observed by some whose previous teaching had rendered them sceptical. It is only necessary before administration to make a careful survey of the general condition of the patient (especially of the circulatory and nervous systems), and to maintain efficient supervision thereafter. Pulse, respiration, and pupil should invariably be investigated by the medical officer within an hour, due regard of course being paid to the quiescence of the patient; and no reliance should ever be placed on any non-medical opinion of the condition of the case. The latter is a vital point. As a rule, those who are restless at night have the hypodermic injection between 7 and 8 p.m., and thus are medically supervised at least twice before 10 p.m. In other cases it is well to avoid injecting near meal hours, especially breakfast and dinner, though this rule is not imperative. Special care of all such cases is, of course, in addition, constantly taken by the attendants.

Inattention to various little details in the mode of injecting sometimes causes failure. Thus I have known very little effect follow a fair dose, simply because the needle of the operator was plugged, and the fluid intended for the subcutaneous tissue forced upwards into the barrel, or out of the point above the needle; and a similar result sometimes occurs when the point of the instrument is imbedded in the tough cutis. Again, the fluid should not be kept too long, and it should, though slightly tinged, be free from sediment. I have, indeed,

* *Op. cit.*, p. 412. This case is the more to be regretted, since I believe it caused my accomplished friend, Dr. Lauder Lindsay, to lose confidence in this method.

noticed that a practitioner has returned a good solution to the druggist, because it had become granular; yet a drop or two of glacial acetic acid rendered it all that was needful. If the dose is of any strength, its effect, sooner or later, rarely fails to ensue. A noisy night may occur, but next day the patient will be very much improved, and, according to circumstances, a dose of *Tr. Canabis Ind.*, a drink of warm beer, a game at cricket or football, or a long walk in the open air before bed time, will probably suffice next evening.

The excellent instruments now supplied for hypodermic purposes simplify the procedure very much; and by having a small stoppered bottle, with an aperture wide enough to admit the barrel of the syringe, the requisite quantity may be drawn in before the needle is screwed on. The most convenient spot for injecting is near the insertion of the deltoid, the needle being thrust perpendicularly through the skin, the point then turned downward for some distance into the subcutaneous tissue, and the fluid injected. It is not now necessary to do more than hold the point of the finger for a moment over the puncture, after withdrawing the needle. No local disturbance of any kind was ever observed.

It is not to be supposed from the foregoing remarks that the drug is given where it might be withheld. On the contrary, it is considered even more successful to promote convalescence without such aid. Moreover in this, as in most modern asylums, several weeks will occasionally pass without a call being made on the hypodermic or any other method of administering sedatives or hypnotics, the whole house after 8 p.m. being so quiet that only the heavy breathing of the sleepers or the tick of the clocks is heard.

In conclusion, I have no hesitation in recommending the discreet employment of the hypodermic injection of the acetate of morphia in the practice of the alienist physician. The evil effects stated to have been observed after its use have never come under my observation; on the contrary, the hypnotic and sedative results have been, on the whole, very uniform and eminently conducive to the comfort or recovery of the cases. Indeed, my opinion of its utility has never varied, and I should not like to continue my practice in the department without its aid.

To D. H. Tuke, M.D.

W. C. McINTOSH, M.D.

We have recently seen some cases treated hypodermically at St. Luke's Hospital, under Dr. Mickley's care. In one, a patient labouring under puerperal melancholia with attacks of excitement, the dose of hydro-chlorate of morphia was increased from gr. $\frac{1}{3}$ ter die on August 13th to gr. $\frac{5}{6}$ on the 31st. On September 6th, gr. ivss were injected in the day. The drug controlled restlessness and induced sleep. Her mental condition improved. On the 11th, gr. vj were injected in the day. It was then reduced to gr. iv a day, on account of too much sleep being induced. The dose was raised until Octo-

ber 15th, when it reached gr. iij $\frac{2}{3}$ thrice daily. She was very sleepy. Her mental state was a little improved. The remedy was now discontinued till November 14th, during which time she lost ground, and was noisy and destructive. Morphia was again injected, beginning with gr. ij. There was a good deal of sleepiness induced. It should be stated, that through the whole time of treatment, the appetite was not affected, and she only once vomited. The morphia treatment was not pursued further. The patient was restless, and did not appear likely to be further benefited.

In another case, one of melancholia with suicidal tendency, morphia was first given by the month (gr. $\frac{1}{3}$ ter die, increased up to gr. j). The patient was quieted. Half grain doses were then injected and increased gradually up to gr. iij twice daily. There were no ill effects. It was then suspended, the result of the experiment being that the patient became restless again.*

[We should be glad if any of our readers who have used the prolonged warm or tepid bath would send us the result of their experience.—D. H. T.]

PART II.—REVIEWS.

The Lunacy Blue Books.

Thirty-second Report of the Commissioners in Lunacy (England), ordered to be printed 2nd August, 1878.

The Twenty-seventh Report of the District Criminal and Private Lunatic Asylums in Ireland, 1878.

Twentieth Annual Report of the General Board of Commissioners in Lunacy for Scotland. 1878.

The matter most pointedly to be noted in the English report, is the steady progress in the numbers of the registered insane, and in the means provided for their care and treatment in the lines laid down for a number of years past.

The increase of the year is represented by 85 males and 10 females among the private, and by 774 males and 1,033 females among the pauper patients. Among the private patients this increase for the year has been below the average of the last ten years; among the paupers it has been somewhat above the average; while, if we take both classes together, it will be found that the actual increase now stated has been exceeded on four previous occasions during the 20 years of fully-re-

* These particulars are taken from notes entered in the case-book by Mr. John F. Woods, the clinical assistant.

corded experience, namely, in 1863, when the increase for the year was 1,989 ; in 1868, when it was 1,914 ; in 1869, when it was 2,177 ; and in 1871, when it was 2,042.

Whilst the gross increase of patients in county asylums has been 2,215, we find that the admissions have increased from 11,042 in 1876 to 12,816 in 1877, an increase of 1,774, but if we make allowance for the greater number of transfers in the year 1871, the increased number of admissions stands at only 344. Or if we include all pauper patients admitted into hospitals and licensed houses as well as into asylums, and allow for the transfers, so much more numerous in 1877, we find that there is an actual falling off in the nett admissions of pauper patients to asylums during the year of 120 ; this must be regarded as eminently satisfactory, and as a ground for hope that the admissions have ceased to grow under the influence of the Government Grant—though maintaining the increase due to its action during the past years.

We cannot find, however, anywhere in this report, or in those of the past few years, any ground for hope that the gradual increase in the admissions that has so long been going on, and which is chiefly due to the discovery gradually being made by the public that troublesome people have sufficient mental defects to admit of their being sent to asylums as pauper lunatics, will not continue. It may be well to again draw attention to the well-known but too often forgotten circumstance that did the admissions cease to increase, the numbers in asylums would continue to do so for many years to come. Thus, taking the admissions at 12,000, the recoveries are about (on an average) 35 p.c., the discharges otherwise than recovered about 15 p.c., together 50 p.c, the remainder have to be disposed of by death, viz., 50 p.c. on 12,000, *i.e.*, 6,000. Taking the deaths as averaging 10·5 p.c. on the average number resident, it is obvious that there will always be a residuum from the admissions increasing the average number resident, until the latter is so large as to afford 6,000 deaths at 10·5 p.c. mortality, *i.e.*, till it amounts to 57,143. At the present rate of increase this number would be reached in 16 years. Roughly the average number resident increases until it amounts to 5 years' admissions, though there is strong reason to believe that when it approaches this point, the mortality will fall from 10·5 to about 8 p.c., so that six years' admissions would be more accurate. This belief is founded on the circumstance that we see a very low mortality in those asylums where the accumulation has got well ahead of the admissions, as the Dorset and City of London Asylums.

If this be so, the *present* admissions point to 70,000 as the permanent population of the County Asylums, to be proportionately increased if the annual number of admissions be allowed to grow.

On the recent growth of the admissions and the means of dealing with them, the Commissioners say—

There is, we think, little doubt that the operation of the Parliamentary Grant of 4s. per head per week to the guardians, towards the expenses of every pauper lunatic maintained in an asylum, has tended largely to promote the removal of chronic cases from workhouses and as out-door paupers, into asylums. There is no reason to suppose that either guardians or magistrates are disposed to encourage the removal to asylums of any class of the insane who can be properly dealt with elsewhere ; but we have noticed very generally that when chronic cases become at all troublesome, they are no longer, as formerly, retained in the workhouse, but are removed to the asylum. Such patients are undoubtedly embarrassing to workhouse management, and are better cared for in asylums, although they do not require the more costly arrangements necessary to curative establishments.

A further demand for asylum accommodation, to meet the requirements of such chronic cases, is felt in many counties, and is being provided in some, to be hereafter more particularly referred to. The buildings to be erected for this purpose, whether as adjuncts to existing asylums, or as separate establishments, should be less costly than those of ordinary asylums ; the proportionate quantity of land need not be so large, and the staff of attendants need not be on so high a scale numerically as in the curative establishments ; yet such auxiliary asylums for chronic patients may be made efficient for their purpose, and may be worked at a lower rate of maintenance than the curative or parent asylums.

There is a misapprehension here, which we must admit we have ourselves frequently fallen into, but which is, nevertheless, a serious one, and requires to have attention drawn to it, especially since the view that cheaper asylums may be built for these additional workhouse cases, is an increasing one. So far as this increase of workhouse cases consists of the minor forms of imbecility, and some forms of chronic dementia, such cheaper asylums would abundantly answer the purpose. But these workhouse cases consist much more largely of cases of senile insanity, and of various forms of paralysis, and our experience is that both these classes of cases make much larger demands on the time and attention of the attendants (the expensive part of asylum treatment), than any other class, hardly excepting raving mania, the instances of which are numerically trifling. So that whilst classification is urgently called for, we do not think these cases can, to any extent, be more cheaply cared for satisfactorily than at present. How they are, and

have been taken care of in the workhouse, we do not like to think of. No patient requires more assiduous attention than a bedridden paralytic; whilst as to the senile dement, he is usually so constantly pottering about, getting into mischief, and challenging collision with others by meddling with and interfering with them, that, unless under constant supervision, he is tolerably sure to come to grief.

Nor have we hesitation in saying that, except on the most utilitarian principles, which would justify cold lead as the proper treatment for chronic lunacy, we see no ground for providing the really sick with greater or less care, according to whether they are likely to recover or no.

There is a further instalment of the statistical information collected as to the admissions of 1876, and it is proposed to continue similar information from year to year. These efforts to increase our knowledge as to many circumstances connected with lunacy, which cannot be ascertained in any other way, cannot be too highly commended.

We issued, at the beginning of 1878, fresh forms of register, similar to those circulated in 1876, but modified in some degree, and partly in consequence of friendly suggestions which reached us.

The voluntary labours of the medical officers in keeping these records will enable us, it is hoped, to repeat in 1879, and future years, the information contained in the special tables appearing in our 31st report.

The Commissioners continue to devote their attention to the improvement of the night nursing in asylums. We fear they are right in their surmise that this department is still very defective in many asylums. They report as to the continuous watching of the epileptic and suicidal class of patients, that they

Have again the satisfaction of stating that the result in those asylums in which the arrangements have been fully carried out, has been most encouraging. Not only have the accidental deaths in these classes of patients been very much reduced in number, but the importance of the system has been fully admitted, not only by the medical officers of the asylums, but especially by the attendants, who are relieved of much anxiety during the night, and, in many instances, have expressed to us their sense of the value of the special provision for night watching.

At present the arrangements for this purpose are, more or less complete, in 25 of the County and Borough Asylums. In 16 they have been partially carried out, but are imperfect in important particulars, chiefly in consequence of structural difficulties in the original buildings. In six asylums special wards are in progress, and in twelve no provision has as yet been made.

Not only as respects the epileptic and suicidal patients, do we hope

that ere long we shall be able to report that proper arrangements, both structural and otherwise, have been made in all asylums in England and Wales, but also that the night nursing and care of the ordinary sick inmates is placed upon a more satisfactory footing than at present. In many asylums the sick and dying patients are still under the charge of the ordinary night attendants, and are consequently left for long periods without receiving that constant attention which their cases require. Special night attendants should, we think, be provided in the infirmaries or sick wards of all asylums.

After stating that out of 44,281 patients resident, only 18 committed suicide in all the asylums under their inspection, and which contained 6,096 patients with suicidal tendency, they add—

It is not to be assumed that the whole of the 6,096 patients were actively suicidal, yet, out of so large a number, many, no doubt, were so. It is seldom that a suicide occurs where no blame attaches to the persons in charge, yet the small number, comparatively speaking, of successful attempts, is no doubt creditable to those responsible for the care of the insane throughout England and Wales.

In the County and Borough Asylums, the suicides were nine in number, and the ratio borne by these deaths to the number 4,908, is below the general average in all institutions, being only 1·84 per 1,000.

The same fact may be, by comparison with the general population, found to yield this result, that of the deaths in asylums among a population of whom one-seventh are suicidally disposed, 1 in 420 occur from suicide, whilst among the general population, one death in 350 is from suicide.

So that the precautions against suicide in asylums are clearly multiplied to a degree exceeding the increased tendency to that act.

We have not seen the further fact noted that deaths from violence in asylums do not amount to 1 in 200 deaths, whilst in the general population, they are 1 in 30. After allowing for the absence of manufacturing and locomotive machinery in asylums, and for the probability, to which the Registrar-General has more than once called attention, that the liability to accidents among the general population is much greater than it ought to be, we fear there may be some reason to suspect that the low rate in asylums is attained by an unnecessarily severe interference with the liberty of the subject.

The report contains the usual remarks and entries as to individual asylums. Though interesting in detail, they do not afford matter of general interest; at the risk of being invidious we think it right to note the remarkable patience displayed by the Commissioners in the case of the Cambridge Asylum, where the committee appear to be seriously affecting

the health and lives of their patients by grossly culpable delay in improving the accommodation of the asylum, and when the Commissioners—

Fear that it is not until the occurrence of some serious casualty, owing to the absence of the one medical officer, that the Committee will be induced to appoint a second.

With this almost unique exception, the condition of all the asylums reported on appears, except as to quite secondary matters, to be eminently satisfactory.

The average weekly cost per head, of maintenance, medicine, clothing and care of patients in County Asylums during last year, was 9s. 11d., and in Borough Asylums, 11s. 9 $\frac{7}{8}$ d. In both, taken together, this cost was 10s. 1 $\frac{7}{8}$ d., being rather more than for the year 1876, which was 10s. 1 $\frac{5}{8}$ d. The increase is in the County Asylums, the Borough Asylums showing a decrease. The rise in cost is under the heads of "Provisions," and "Salaries and wages."

The precise reason for separating County from Borough Asylums in this calculation we never quite understood. We see no objection to it, except that it is misleading. It implies that the cost in Borough Asylums is 1s. 11d. greater than in County Asylums from laxity of management in Borough institutions, whereas it results chiefly from the fact that Borough Asylums are, as a rule, small institutions, and the cost per head therefore greater. If the division were made strictly between asylums of under and over 400 patients, the difference would be equally or more marked, though the cost in some of the small institutions is also low.

The Twenty-Seventh Report of the Inspectors, constituting the Irish Lunacy Blue Book for 1878, on the Asylums and Condition of Lunacy generally in Ireland, extends over 103 pages, but nearly four-fifths of it consists of an appendix comprising tables, for the most part of no interest.

It begins, after a short introductory, with the comparative statistical summaries for the year 1876 and 1877, from which we see there was an increase of 257 in the general lunatic population for the latter year, this being markedly contributed to by the pauper element of the community, and leaving a total of 12,380 under detention at the end of 1877; if to this be added 6,626, the aggregate of the insane at large, we get a ratio of about 3.50 per thousand of the general population.

There were 2,314 admissions to district asylums, including 390 relapsed cases, a diminution of 30 as compared with the previous year; and with reference to this subject the Inspectors draw the satisfactory conclusion as follows:—

So far, then, as the more authentic statistics of insanity in this country sustain an opinion, and which on other grounds we apprehend to be correct, lunacy is not so progressive in it as it is regarded to be in other portions of the United Kingdom.

In adverting to the diffusion of mental disease and acknowledging the unreliable nature of the statistics concerning it, compiled as they are by the constabulary, it is cheering, as indicative of progress, to notice the concern of the Inspectors to test the accuracy of these returns, in the following passage :—

To arrive at a more definite knowledge on this subject we purpose seeking, through the Local Government Board, returns from the dispensary physicians in the Unions comprised within two or three Asylum districts, of the insane at large, by name, with the nature of their maladies, so as to compare them with those we have otherwise obtained.

We trust these returns will not be made on mere hearsay, but only after personal examination by the medical officers; yet, though as a general rule dispensary physicians in Ireland are extensively acquainted with the population comprising their respective districts, we fear, unless specially remunerated for special work, they will not devote sufficient attention to the subject to ensure the accuracy of their statistics. But in order to arrive at a correct estimate of the diffusion of mental disease it will first be necessary to ensure a more extensive diffusion of the knowledge concerning it amongst medical men in Ireland, by making its study part of the students' curriculum in the Irish medical schools, as is already the case in this country.

Further, with reference to this subject, the Inspectors are of opinion—

It may be proximately assumed that one individual in about 2150 of the population is primarily attacked each year by mental disease, and as the recoveries or improvements justifying a discharge, and which occur at indefinite periods ranging from months even to years, may be estimated at nearly 76 per cent., 24 would thus continue to be incurred; hence Asylums—making all due allowance for those who may die in them, or may be taken home by their friends—must necessarily become overcrowded in the progress of a generation.

But in this calculation, gloomy as it must seem to the rate-payers, no allowance appears to be made for those cases suitable for transfer to the workhouses. The Inspectors are evidently strongly opposed to such establishments as receptacles

for the insane, for in speaking of them we find them repeating their formerly expressed opinion—

That the most suitable place for every demented person, lunatic or idiot, dangerous or inoffensive, is an Institution devoted to the care of the insane, under the management of experienced attendants well acquainted with the treatment of mental disease in every form.

But beyond this they reserve all comment or suggestions for their improvement, or for provision for chronic harmless lunatics pending the report of—

The Commission of Inquiry into the feasibility of amalgamating Unions, whereby some workhouses might possibly be rendered available for other than their primitive object (*viz.*, by the transference) of an unoccupied Workhouse to the Lunatic Department in each Asylum District, should the Local Government Board sanction the procedure.

The recoveries give the very creditable rate of upwards of $46\frac{1}{2}$ per cent. on the admissions, whilst the deaths give the equally gratifying percentage of 8 on those under treatment during the year; and even this exceptionally low rate is much augmented by the mortality in the two largest Asylums, *viz.*, those at Dublin and Cork. There were only seven effectual escapes and one suicide, the latter occurring in a private asylum, during the year. This is far too good to be satisfactory, for it implies too little liberty given to the patients, too little trust placed in them, and a too prison-like management of asylums. The general results, however, of their treatment and efficient management cannot but be highly encouraging to the Medical Officers of these Institutions, especially when they consider the many notable drawbacks against which they have to strive. For example, with reference to the subject of overcrowding, a cause well known to those familiar with asylum administration as potent alike in retarding recovery and promoting the ravages of disease, we may quote the following extracts from the Inspectors' remarks:

In the tabular distribution, already given, of the insane poor throughout the Kingdom, 8,183 are returned as resident in district asylums; it would, however, be fallacious to assume therefore that a suitable accommodation exists in them for that number; a portion of it, to speak correctly, finding a refuge only within their walls, there being located in some institutions from thirty to forty, and even more inmates per hundred, beyond their legitimate complement.

The Asylum (Londonderry) built nearly fifty years ago for 112 patients contains at present 260; so overcrowded is it that as many as from eight to nine beds are to be found in dormitories scarcely calculated

for five. There is nothing like adequate day-room provision, the kitchen and laundry for the use, between sane and insane, of 320 inmates have, respectively, not more than eighteen feet square of superficial area ; there is no available space for structural enlargements, there is no infirmary, no refectory, no chapel, no suitable offices of any kind, no space for airing yards, in a word, it has no recuperative power, and such being the case, ought to be replaced by one erected on a well adapted and open site of from forty to fifty acres.

Again, the Asylum (Belfast) of the district is occupied by 440 patients, with an excess of admissions from one year to another so great that it is now overcrowded by 80 beds, space for which has been principally obtained by the conversion of workshops and other rooms from their primitive objects into dormitories ; the infirmary provision is very limited and badly circumstanced, so much so that as a security against contagious and febrile epidemics cases were recently sent out to the Union hospital. In consequence of a want of suitable day-rooms no proper classification can be effected, as many as a hundred and twenty males being congregated in the one apartment. With three chaplains and three congregations there is no place of worship for any one persuasion.

Under the preceding circumstances we are of opinion the wisest course for adoption would be found in erecting an Asylum to hold 260 beds for the County Antrim itself, in a central position—Belfast being on the confines.

Allowing the foregoing extracts to speak for themselves, we will be content, without much comment, in endorsing the opinions and recommendations of the Inspectors ; but we regret we cannot join in their general gratification, elsewhere expressed, at the condition of these Institutions. Nor can we understand how a generous public, usually jealous of the treatment of its mentally afflicted brethren can tolerate in its midst such a disgraceful state of things as these quotations reveal. It affords another argument, if such were wanting, against the transfer of the Irish Asylums to local management, and as the matter is still in the hands of the Executive, we trust the remedy will be speedily applied ; meanwhile we may congratulate ourselves that society in this country is not so parsimonious or neglectful of its duty to afflicted humanity. The following paragraph, however, is re-assuring :—

Our inspection of these Institutions at irregular dates, are quarterly, and we cannot but notice from year to year—in some institutions no doubt more perceptibly than in others—progressive improvements in their organization ; better furniture continues to be supplied to them, and more attention paid to homely ornamentation, as well as to means of amusement within and out of doors.

But we fear from our knowledge of the Irish Asylums that there is much yet to be done to raise them to the standard attained elsewhere, and that the Inspectors can hardly be cognizant of the rapid strides towards the more enlightened treatment of the insane made in this country, in America, and on the Continent within recent years. Was an Irish Inspector ever heard of making a tour to see the best of the institutions elsewhere?

We are told that—

A scale of improved and more uniform salaries, in favour of Clerks and Storekeepers, has been approved, and is being brought into successful operation.

We regret this does not extend to the more subordinate officers, attendants and nurses, whose miserable remuneration in the Irish Asylums must fail to attract to the service of these institutions persons suitable for their employment, especially since the wages of all classes have so vastly increased of late years, and since the result of the treatment of the insane so largely depends on those in immediate attendance on them. Moreover, in the Irish Asylums, supervision and guidance of attendants in their duties, owing to the deficient and peculiar nature of the medical staffs, cannot be so thorough as it is in kindred English institutions, where there is always at least one, and, in many cases, several medical officers resident. This would afford another argument for a more liberal remuneration, and such as would ensure a more respectable class of applicants.

In referring to the local management of asylums, we find the inspectors bearing

A willing, because deserved, testimony to the prevailing humanity of the subordinate staffs, members of which, in some instances, are not adequately remunerated for the unceasing duties that devolve on them.

We would again, as we have done in previous reviews, notably in that of our number for Jan., 1878, urge on the Inspectors the importance of this subject, and commend it to their favourable consideration.

The average weekly cost per head for the year 1876, that last audited, is a trifle over that of the previous one, or upwards of 9s. 5 $\frac{3}{4}$ d.,

A circumstance (as the Inspectors say) displaying a remarkable uniformity of expenditure, and a fixed system of management ;

So that abstracting £10 8s. 0d., the Government rate in aid, £14 5s. 8d. would represent the charge on the rates for every lunatic in an Irish Asylum during the whole of 1876 ;

Surely a sum which ought not to frighten, but rather add to the magnanimity of Boards of Governors. The Inspectors give some interesting facts connected with the characteristics of insanity, *e.g.*, as regards—

(1). Sex, where they point out the preponderance of the male over the female lunatic population by 8 per cent., though the latter element is $2\frac{1}{2}$ per cent. greater in the general population.

(2). Prevalent period, concerning which they again draw attention—

To the marked disparity existing between the married and unmarried inmates of Irish Asylums, public as well as private, totally at variance with that elsewhere recognised,

The latter bearing a proportion of considerably more than two to one. Of neither of these characteristics of Irish lunacy do they attempt any explanation.

(3). Heredity. Under this heading the experience in Irish asylums is certainly markedly at variance with that noted elsewhere, for we opine that established hereditary taint in 307 out of 8,183 patients is a fact utterly at variance with the facts of nature, and therefore merely deceptive.

We fear we must look on these statistics as worthless ; nor can it be otherwise, as long as the medical staffs of the Irish Asylums are constituted as at present, for how can the most energetic and enthusiastic medical superintendent, with his numerous, varied and harassing duties, find time to sift thoroughly the family history of his patients, and we know that such, especially when tainted by insanity, is often screened and falsified by relatives. Such enquiry in English asylums is usually conducted by the Assistant Medical Officers, who have more leisure for the task, and this may account for the different ascertained hereditary influence in the two countries.

In commenting on the various modes of admission to the Irish Asylums, the Inspectors say—

Last year, as in preceding ones, considerably more than one-half of the admissions was effected through magisterial warrants, under the 30 and 31 V., cap. 118, the patients, not unfrequently advanced in life, and it is regrettable to add, occasionally, in the last stage of existence, and conveyed by a police escort from thirty to forty miles. We consider the Act, just referred to, when discreetly and exceptionally administered, to be well devised for actual requirements ; but it has been unreservedly

employed by local justices for affording a short and incontestible mode of admission. We have done all in our power to check the abuse and obviate irregularities, which lead to much practical difficulties in the treatment of the insane, owing to a want of satisfactory information on the face of the committals in their regard. It must, however, be conceded that the disadvantages adverted to are, in one respect, well compensated, lunatics being no longer incarcerated, save very rarely, for a day or two, when under remand as such, or, in the first instance, charged with offences, when we have them duly transferred to asylums. Not many years back, from five to six hundred insane were to be annually found at one time in city and county prisons.

Doubtless the present is some advance from what may justly be termed the dark ages, as revealed in the latter paragraph of the Inspector's remarks, but, alas, for such progress the compensation is little to be proud of. The remedy appears to be in a nutshell, for, as we have before asked, why this complexity in the mode of admission to the Irish Asylums, when such is unnecessary in the sister isle? If magistrates, as is evident, abuse their power, let that power be taken out of unworthy hands. In our review of the Inspectors' previous report, in alluding to this subject, we wrote :—

Ere this we had hoped that the 107th section of Lord Mayo's Act, 30th and 31st Vict., cap. 118, with reference to dangerous lunatics, would have been amended. Nothing can be more subversive of all modern ideas of the treatment of the insane than thus to transform them into criminals, to make their disease a crime, for which they are liable to be seized by the police, handcuffed, brought before two magistrates in open court, and carried to an asylum under an armed escort. In no other country is such a thing known, and we can see no reason for the continuance of an Act which is so universally disapproved of.

It is high time this slur on the Irish lunacy system was removed, by the adoption of some more practical means, and surely it deserves the serious consideration of the Inspectors and the Legislature.

The report of the Resident Physician and Governor of the Central Criminal Asylum at Dundrum is introduced, as usual, in the remarks of the Inspectors concerning that institution. Dr. Ashe says :—

I am happy to be able to report favourably on the health of the inmates during the year. We have been entirely free from any infectious disease, and have suffered from little except the chronic ailments of old age and infirmity. No suicide, serious accident, or

injury or escape has occurred during the year. The deaths have been only 4 in number, in a population of 178, or 2·24 per cent., all from natural causes. The admissions have been 12, and the total of discharges and deaths, 11.

The daily average number of patients was 167, or an increase of one on each of the preceding years, at an average annual cost per head of £35 4s 11d.

The report again complains of the defective character of the water supply, which is totally dependent on the action of pumps, frequently needing repairs, and worked by the hand-labour of the patients. It further forcibly points out the inconvenience and danger to life and property, sure to occur, should fire break out; and as the Board of Works has, during the year, carried out many important though minor improvements (the introduction of a complete system of hot water pipes, the rejoining of the external walls of the building, and the concrete flagging of the male airing yards) it is to be hoped they will speedily find some practicable means to remedy this evil. In alluding to the overcrowded condition of one division of the asylum, where we are told the average amount of cubic space is under 550 feet per head, the Inspectors say :—

At the female side there is an ample margin of vacancies at present, being the reverse of the condition of the male division. We, therefore, apprehend, despite all our care and precautions, as just indicated (the exercise of discrimination in what they look on as suitable admissions) that at no distant period an obligation for increased accommodation may become so imperative that an additional wing will have to be erected.

The Inspectors speak favourably of the condition of the 22 private asylums, but say—

Three or four certainly stood in need of improvement, the necessity of which we did not fail to impress on the proprietors. They were not, however, in such a condition as to justify an interruption of the license under which they were kept up, for though deficient in their interior arrangements, allowance should be made, not only for moderate stipends, but not unfrequently irregularities and delays in the payments of them by the friends of the insane.

We regret this apology, and that it should be part of the functions of the Inspectors to excuse instead of censure; it merely amounts to this, that the job is not supposed to pay as well as might be expected by the proprietors, and, we fear, left secure in the enjoyment of their license, the recommendation may be unheeded.

The report affords some interesting information as to the

origin and progress of the Irish Asylums, authorised by Act 1 and 2, George IV., passed in 1821. The supervision of the works was entrusted to eight Commissioners, and, some years later, nine asylums, to accommodate 980 patients, were commenced. The control of these establishments, now increased to 22, passed into the hands of the Board of Works in 1836, which continued to act up to 1861,

When by 18 and 19 Vict., cap. 109, two members of the Board, including the Chairman, and the two Inspectors of Lunatics, were appointed Commissioners of General Control and Correspondence, and have now been in office seventeen years.

We are told that, under these different managements,

The sum expended on the establishment proper of district asylums, and the purchase of land attached to them, may be set down in round numbers, up to the close of last year, at a million two hundred and fifty thousand,

To which—

May be consistently added £74,000, the value of the Richmond Asylum, presented as a gift to the Metropolitan Counties.

As usual, the Scotch Reports contain much interesting matter, and very many ingenious and elaborate but disorderly statistical tables. There were in Scotland, on 1st January, 1878, 7,473 pauper, 1,569 private, and 55 State-paid lunatics, being an increase of 234 in the year. The following extracts are of general interest:—

No Pauper Lunatic in a Private Asylum.—Perhaps the figures in Table I. disclose no fact of greater interest than that all the pauper lunatics of Scotland, who are placed in asylums, are now provided for in public institutions. We have no pauper patient in a private asylum. All lunatics supported by the public and in confinement are now disposed of in establishments not merely under the supervision of the State, but also created and controlled by the public. It is no longer the interest of any private individual, either to make a profit out of the low rate of board paid for them, or to prolong their detention unnecessarily. This change in the way of providing for those of the pauper lunatics of Scotland who are held to require the restraints and appliances for their safe keeping and proper care, represents the complete accomplishment of one of the chief objects in view when the lunacy laws were amended in 1857. So far as we are aware, this particular end has not been so completely attained in any other country.

No Increase in Accommodation for Incurables.—It is also deserving of special note that there is no indication in the figures of the table of any undue tendency to develop the cheaper forms of asylum accommodation. The figures show, on the contrary, a decrease of

the population of the lunatic wards of poorhouses, which represent the cheapest of these forms. It does not follow, however, that a growth of these establishments is undesirable, either in the interests of the insane poor or of the country. They are brought sufficiently under our control, and we have not to complain of any desire to exercise an economy in their management which is injurious to the inmates.

The Production of Lunacy—England v. Scotland.—The increase of the number of registered lunatics which has taken place in Scotland will be more correctly appreciated if it is contrasted with the corresponding increase which has taken place in England.

During the twelve years, 1866-77, the proportion of registered lunatics, private and pauper, has risen in Scotland from 206 per 100,000 of the population to 243. In England the proportion has risen during the same period from 222 to 271.

If we confine the comparison to paupers, the results are even more striking. Thus: in Scotland the proportion of pauper lunatics to 100,000 of the population in 1866 was 171, and in 1877 it had risen to 202. In England, again, the proportion, which was 194 in 1866, had risen in 1877 to 240. In other words, during the period in question, the increase per 100,000 of the population was 31 in Scotland and 46 in England.

The whole number of pauper lunatics rose in England from 31,782 in 1859 to 59,039 in 1877; and in Scotland, during the same period, it rose from 4,980 to 7,191. If the Scotch increase had been in the same ratio as the English, the pauper lunatics of Scotland in 1877 would have been 9,251 instead of 7,191. On the other hand, if the English increase had been in the same ratio as the Scotch, the pauper lunatics of England in 1877 would have been 45,892 instead of 59,039.

The proportion of private lunatics to population is larger in Scotland than in England. Thus, in Scotland there were, on 1st January, 1877, 1,461 private lunatics, and in England, on the same day, 7,597; and these numbers give for Scotland 43 in 100,000 of the population, and for England 31. In the rate of increase, the two countries do not show so great a difference as is seen in the case of paupers. The growth of registered private patients in England has been from 4,980, in 1859, to 7,597 in 1877, and in Scotland from 1,035 to 1,461.

The Three Modes of Providing for the Insane: Complementary.—All these lunatics are under the jurisdiction and supervision of the Board; and it is not due to any direct action on our part that the different modes of disposing of them have been adopted in the proportions shown in the foregoing statement. In other words, it is not due to the fostering of any one mode of providing for pauper patients, or the discouragement of any other. It is, in our opinion, advantageous both to the insane poor and to the country that these various ways of disposing of pauper lunatics have been sanctioned by the law,

and we regard them as forming together a satisfactory scheme of providing for the insane poor. It appears to us, indeed, that no scheme would be complete if any one of the different ways were prohibited or ignored by the statutes. The lunatic wards of poorhouses may be regarded as establishments which are succursal to asylums; and private dwellings, as homes for the insane, may be regarded in the same light. The three modes of provision are complementary to each other, and are parts of a whole.

The Death-rate in Asylums compared with the General Population at the same Ages.—The death-rate of asylums cannot properly be compared with the death-rate of the general community. In asylums there are no persons under the age of ten years, whereas more than one-fourth of the general population is under that age. This fact alone, even if the death-rate among children did not show a rate of progress very different from that of persons above the age of ten, renders it impossible to institute a true comparison between the mortality of asylums and that of the whole community. Accordingly we have prepared the following table, which shows the rates at which patients of different ages die in asylums, and the rates at which persons of corresponding ages die in the general population.

In the third column we give the proportions which the asylum death-rates at the different ages bear to the death-rates at corresponding ages in the general population.

Ages in Years. From	Mean Annual Mortality per cent. of Patients resident in Asylums at different ages.	Mean Annual Mortality per cent. of the General Population at different ages.	Number of Deaths in Asylums to one death in the Population at different ages.
10 to 15	6.2	.58	10.7
15 to 20	6.8	.79	8.6
20 to 25	6.3	.99	6.4
25 to 30	5.1	1.05	4.9
30 to 35	6.2	1.09	5.7
35 to 40	6.4	1.29	5.0
40 to 45	6.8	1.33	5.1
45 to 50	6.8	1.66	4.1
50 to 55	7.9	1.97	4.0
55 to 60	9.1	2.47	3.7
60 to 65	11.7	3.32	3.5
65 to 70	15.0	4.72	3.2
70 to 75	18.7	6.91	2.7
75 to 80	26.7	10.89	2.5
80 to 90	39.6	20.63	1.9
90 to 100	20.4	38.41	0.5

This table shows that the inmates of asylums at all the quinquennia between the ages of 10 and 50 die nearly at the same rate, though the quinquennium, 25-30, may be regarded as exhibiting an exceptionally low death-rate.

In the general population, on the other hand, the death-rates for all the quinquennia between 10 and 50 increase annually in geometrical progression; and the death-rate for the last quinquennium, 45-50, is about three times that of the quinquennium, 10-15.

After the age of 50, that is, when the working period of life is over, the death-rates in asylums for the different quinquennia rise from period to period by a considerable though irregular progress. As regards the general population, they also rise rapidly but in a steady geometrical progression.

Improvements in Asylums made by the Scotch Medical Superintendents.—During late years considerable changes have taken place in the structural arrangements of Scotch asylums, and in the management and treatment of the patients. These changes are in directions which have for a long time been advocated by the Board, but they have nevertheless been originated and carried into practice by the Superintendents of the different asylums, and have received additions, modifications, and developments of one kind here and of another kind there. Their aim, however, is everywhere the improvement of the condition of the patients by a rational extension of the principles of non-restraint in their treatment; by the encouragement of healthy, profitable, and interesting occupations; by efforts to make asylum life resemble ordinary life; and by a full appreciation of the value of general hygienic measures as promotive of recovery in curable cases, and of comfort and contentment where recovery is hopeless. Perhaps, to some extent, the desirability and need of progress in these directions have been unconsciously felt as a result of the change which has undoubtedly taken place in the character of the population of asylums. It does not admit of question that among the inmates of asylums there is an increasing proportion of the inoffensive and incurable, of the infirm in body as well as mind, and of persons whose mental disorder is but slightly marked. To these patients many of the restraints and much of the discipline of asylum life are irksome and unnecessary. Many such persons, indeed, are sent to asylums not so much to promote their own well-being and happiness as to promote the comfort and convenience of others. Patients like these do not require the same appliances for their safe and proper keeping as are required by patients more acutely or more actively insane; and it seems only reasonable that their large and growing number in these establishments should result in such changes as we have indicated.

Elasticity and Adaptation of Scotch Lunacy Laws.—It is a satisfactory feature of the Scotch lunacy laws and of their administration, that no hindrance to progress is offered through the existence of any uniformity or inflexibility in the standard of what is

proper. This admits of, and perhaps encourages, the putting into practice by the different Superintendents of different plans of management, which their own experience leads them to originate and regard as improvements. Had it been otherwise, and had a strict uniformity in the mode of dealing with their patients being pressed on them, it is probable that we should not have had the opportunity of recording some of those beneficial changes in the structural arrangements of asylums, and in the modes of managing their inmates, to which we are about to allude. So long as the aim is good, so long as the purpose is benevolent and honest, the intelligence of such Superintendents as preside over Scotch asylums may with safety be trusted not to propose the introduction of changes which have not a reasonable prospect of attaining their end. If in some instances failure appears to us probable, or even if new modes of treatment are occasionally adopted which seem to us in a wrong direction, it is practically found sufficient that we state our views and doubts, and thus secure a careful reconsideration of the matter.

Criminal Lunacy in 1877. Broadmoor Criminal Lunatic Asylum. Annual Report for the year 1877. 32nd Report of Commissioners in Lunacy, 1877.

The provision for the care and custody of Criminal Lunatics appears to have gradually got into a very unsatisfactory condition. When Broadmoor was first established it appears to have been supposed that it would accommodate all criminal lunatics, but a statement of the actual number of such patients would have shown this hope to be delusive.

The actual condition of the Broadmoor Asylum, as exhibited in these reports, as a place for the custody of Criminal Lunatics, leaves little to be desired. A little carping fault-finding might find a hole or two here and there, chiefly in the matter of expenditure. But the chief source of the excess of expenditure over, say a County Asylum, is in the extent and emoluments and of the staff, both of which are fully justifiable, on account of the class of patients cared for at Broadmoor. Provisions are in excess of County Asylums, as are clothing and heating. We are not prepared to say that the scale of efficiency in these matters at Broadmoor is not more commendable than that of County Asylums.

It is, however, a matter of much regret to us to find that Broadmoor has come to be the Asylum for only a section of Criminal Lunacy, and that not the most special and troublesome section. Taking the patients confined in Broadmoor as

one section of Criminal Lunatics, and dividing the remainder into similar sections, we find that there are two sections of Criminal Lunatics who are more troublesome and dangerous than the Broadmoor section, and whose cases cry more loudly for special provision; whilst the remaining sections, though not of so severe a type, ought still to be provided for apart from the ordinary lunacy of the country.

Broadmoor did originally provide for one of these worse sections, or at least was supposed to do so. But it easily got rid of a portion of them under a special statute, which was at the time believed to be an advance in the method of dealing with these cases, and from one point of view and for some of the cases is so, but taken in the lump, is by no means so, but a decidedly retrograde measure.

The class of cases originally sent to Broadmoor included—1. convicts under sentence of penal servitude; 2. persons detained during Her Majesty's pleasure, who had been charged with serious offences. Of these the former class are much the most violent, troublesome, dangerous and difficult to manage. Of these, all whose sentences expire are removed to County Asylums, under the new Act, and this enactment enabled Broadmoor to receive, in 1868, from other Asylums, all the remaining cases of Criminal Lunacy of those classes for which it was intended, but at the expense of saddling the County Asylums with a large share of its most troublesome cases. Notwithstanding this, the Commissioners in Lunacy always found reason to complain of the amount of seclusion and other restrictive measures in use in the Broadmoor Asylum. These objectionable features in the management of the Broadmoor Asylum were shown to be almost inseparable from the care of the convict class; and to remedy them during the past few years, no patients of this class have been sent to Broadmoor, and those already there are being gradually shunted to the County Asylums. So that the Superintendent of the Asylum is now able to report that—

The number of patients under sentence of penal servitude having been thus brought within the limits of the suitable accommodation which exists here for persons of that class, their management no longer causes either anxiety or undue trouble.

Now, as regards Broadmoor itself, we have no fault to find with this. The class of patients now there are fully entitled to be separated from these pestilent convicts, and require the additional care for their safe custody that Broadmoor gives as

compared with a County Asylum. But viewing things as regards the interests of these convict patients on the one hand, and of the County Asylums and the great mass of their respectable inmates on the other, we see ground for the gravest dissatisfaction.

These insane convicts who are not now sent to Broadmoor, but detained at Woking Prison, are removed from the inspection of the Commissioners in Lunacy, who remark that "no returns are made to us as to these criminal patients, nor have we any official knowledge of their number," and it does not appear that they visit them, and instead of being subjected to a limited amount of seclusion and restriction generally (unduly great, though the Commissioners in Lunacy considered that to be) are now subject to a very unlimited amount of seclusion, and, so far as we are informed by any authority with a knowledge of the proper care of lunatics, may be subject to the grossest ill-treatment.

On the other hand, a large number of these convicts, too pestilent and troublesome to be dealt with along with the other Criminal Lunatics at Broadmoor, are sent into the wards of the County Asylums, which are wholly unsuited for dealing with them, and where they are at once a grievous insult and a frequent source of injury to the respectable class of patients.

The memoranda of the admissions to Broadmoor enables us to compare the cases retained in Broadmoor with those that are passed on after a temporary residence of a few days in Broadmoor, with what precise object is not clear, from Woking Prison to the County Asylums.

Retained at Broadmoor,

909.—T. H., aged 27, striker. Tried in December, 1876, for wounding, with intent to murder, and attempting suicide; found not guilty, on the ground of insanity. It appears that his wife died unexpectedly, and that his distress at the event ended in an attack of mania, during which he assaulted a fellow passenger (an entire stranger) in a railway train, under the delusion that this person was a detective or policeman sent to take him away. He afterwards attempted to commit suicide by endeavouring to throw himself out of the carriage window. On admission his mind continued to show signs of weakness.

904.—A. G., aged 28. A journeyman smith. Admitted on the 26th March, 1877. Was indicted at the Central Criminal Court, 10th January, 1877, for arson, and found insane on arraignment. His mother says he has been always weak-minded, but has become worse since the death of his father. He has suffered from epilepsy for 11

years. His father's cousin is at present in an asylum. Very weak-minded, with frequent epileptic attacks.

910.—T. O., aged 11 years. Was charged with arson, and found unfit to plead, on the ground of insanity. Admitted into Broadmoor on the 6th of June, 1877. An imbecile boy, who can scarcely articulate so as to be understood. Irregular (choreic) muscular action of eyes and hands.

Forwarded to County Asylums—

896.—M. W., aged 25, single, labourer. Admitted January 1st, 1877. Was tried at Liverpool in 1870 for larceny after having been convicted on several previous occasions, and was sentenced to seven years' penal servitude, in the course of which he was found to be insane. Had latterly been under detention in the lunatic wards of Woking Convict Prison. Incoherent and with numerous delusions. Transferred to the Rainhill Asylum on the 7th of February.

897.—G. J., aged 47, labourer, widower. Tried at Usk for larceny. Found guilty, and sentenced to seven years' penal servitude, two previous convictions having been recorded against him. Admitted 1st January, 1877, when he was found to be somewhat excitable, and labouring under the delusion that he was experimented upon, when in bed, with electricity; and also that he was annoyed by voices at night, accusing him of unclean practices. Transferred 2nd February, 1877, to Abergavenny Asylum.

917.—J. F., aged 29. Sentenced in August, 1872, to five years' penal servitude for "unlawfully wounding." Many previous convictions for felony. Received into Broadmoor on 17th of August, 1877, from the lunatic wards of Woking Prison for transfer to his County Asylum at the expiration of his sentence. Gross and brutish aspect. Demented and incoherent.

No one who considers these facts can doubt that special Asylum provision is required for these lunatic convicts, both those at Woking and those sent to County Asylums. At the same time we are not prepared to dispute that some of them (and still more some of those detained during Her Majesty's pleasure at Broadmoor) might be properly cared for in County Asylums if the selection were made on the ground of mental state, and not on that of expiry of sentence, an accident which in no way changes the ingrained villainy and brutality of some of these men.

There remain still without special provision, in addition to those already considered, persons who have been convicted of minor offences and who were confined in county prisons, and who have hitherto been all sent to County Asylums.

Of these not a few are distinctly of the criminal class of

society, and in every respect as unfit for care in County Asylums as the convicts from Her Majesty's prisons, and a great majority have some of these characteristics. These patients we consider to be a worse class of criminals hitherto than those now confined in Broadmoor. Now that the County Prisons are a charge on the Government, we might reasonably expect some proper provision apart from the County Asylums to be made for these cases. As a mere matter of safe custody this appears to be imperative. We have ourselves come to regard the normal method of discharge from County Asylums of the worst class of Criminal Lunatics (those whom it is least desirable to have at large) to be by escape, and a table given in the Broadmoor report shows that criminals escape from these asylums in a twelve-fold ratio to that in which they escape from Broadmoor.

The foregoing figures reduced to percentages, for the sake of more ready comparison, gives the following results:—

TABLE XXIX.

	Rate per cent. of Deaths calculated upon the aggregate of the yearly Totals of Numbers of Criminal Lunatics under Treatment during the Periods specified.	Rate per cent. of Instances in which Criminal Lunatics escaped, and were not re-captured before the end of each year, during the Periods, specified.
In all the Asylums in England and Wales, taken together in which criminal lunatics were confined during the seven years immediately preceding the opening of Broadmoor, from 1856 to 1862, inclusive	4.59	0.62
In all the Asylums in England and Wales, taken together, in which criminal lunatics were confined from 1863 to 1876, inclusive, with the exception of Broadmoor.....	5.84	0.83
In Broadmoor, from the date of its opening, in 1863, to the 29th of September, 1876	2.38	0.07

And this, it must be observed, does not include the escapes of

those who most frequently do so, and whose escapes are least desirable, viz., the sentence-expired convicts.

The less mortality in Broadmoor is easily explicable without any reflection on the other asylums. The patients in Broadmoor have almost all been long resident, whilst the criminals in County Asylums, being under shorter sentences, are more largely recent cases. Wherefore the mortality in Broadmoor approaches that of Convict Prisons, which is very low, those in County Asylums approach that for recent cases of insanity, which is as high as 25 per cent.; the actual difference, therefore, 2·38 and 5·84. is not a surprising one.

Those insane persons who have committed minor offences, and who would, had the offences been grave, have been confined during Her Majesty's pleasure, are, as a class of criminal lunatics, almost evanescent, either the insanity or the offence being generally ignored by the magistrates; in the one case, they are sent to prison as if sane; in the other, they are handed over to the relieving officer to be dealt with as ordinary patients. The latter appears to us the most commendable course, as these people are almost invariably ordinary lunatics, who have not been properly looked after, and are rarely of the criminal class.

The frequency with which General Paralytics are convicted of larceny and similar offences, and their mental state unrecognised even after a considerable stay in gaol, and who are brought to the asylum either as criminal lunatic or as ordinary cases, some time after their discharge from gaol, is very discreditable to the administration of the law, and deserves more attention, with a view to remedy, than it has received.

The criminal becomes insane out of gaol much more rarely than whilst under sentence. Still he is occasionally sent to the asylum as an ordinary patient; on this account, more frequently, however, he is sent immediately after his discharge from prison, where an effort has been made to retain him till the expiry of his sentence without officially recognising his insanity, beyond some trifling relaxations of discipline. It also happens occasionally that a non-criminal patient has his disposition so altered by his insanity as to be for all practical purposes of classification a member of the criminal class. These classes of nominally ordinary patients should be eliminated from the County Asylums, and the ground of removal should unquestionably be the mental state—just as we have suggested, that some patients now confined as criminal lunatics

might, on the same ground, be removed to County Asylums without objection.

We are wholly without information as to the number of several of these classes of criminal lunatics. The following attempt to tabulate them is not, therefore, very satisfactory :—

IN	Worst Class Convicts under Penal Servitude.	Same Class Sentence ex- pired.	Worst Class but one. Convicts un- der short Sentences.	Same Class. Sentence ex- pired.	Least Troublesome Class con- fined during Her Majesty's pleasure.	Patients of Criminal Class not Committed under Criminal Process.
County Asylums	...	300 (?)	146	500 (?)	(?)	200 (?)
Broadmoor	82	...	(?)	...	399	...
Other Asylums	(?)	(?)	70 (?)	200 (?)	(?)	(?)
Woking Prison	(?)

From which it sufficiently appears that there are three times as many criminal lunatics in County Asylums as in Broadmoor, and what is more remarkable, those in County Asylums (1,200) are of a worse class, taken as a whole, than are the majority of patients (399) in Broadmoor—a circumstance abundantly proved by the admission that these cases are too troublesome and difficult to manage to be properly accommodated at Broadmoor with its immense staff and special appliances.

At the same time we would point out that though we estimate the number at 1,200, special accommodation is not required for more than a half of this number, *i.e.*, if the selection be made on the ground of mental state. A considerable proportion of them have always been fit subjects for County Asylums, whilst of the others, even of the worst class, not a few have been for years inmates of County Asylums, and have in the course of time either become demented and harmless, or have become so far civilised as to be now but little objectionable.

The Localisation of Cerebral Disease. By DAVID FERRIER, M.D., F.R.S.

Dr. Ferrier has published the Gulstonian Lectures for 1878 in a separate form, and by so doing has rendered them accessible to a large number of readers who confidently expected from him a contribution to our medical knowledge on the localisation of cerebral disease. As he remarks in his preface, this book is the complement of "The Functions of the Brain." He first replies to the arguments of Brown-Séquard against the localisation of many cerebral diseases. He draws attention to the distinction that should be made between direct and indirect results in cerebral disease, and also between causes and "co-existence or fortuitous collocation." He upsets the conclusion drawn by Brown-Séquard from his 200 cases of paralysis and brain disease occurring on the same side, by showing that the pyramids and pyramidal strands are subject to developmental variations, among which is the occurrence of no decussation at all, and of course of no cross paralysis in such cases. He most properly dwells at length on the fact that the same movements may have a plurality of causes according as higher or lower ganglia, all of which may be said to originate some new or super-added nerve impulse in the case of every muscular movement whatever that has a cerebral origin. The author only claims for "paralysis" of truly "volitional movement" a cause necessarily cortical. The psychological analysis of the American lad Gage after he had a crow-bar driven through the præ-frontal region of the brain (p. 30) is a very interesting medico-psychological study, the minuteness and accuracy of which will, we hope, be imitated by future observers of brain lesions followed by mental symptoms. We think we know what he means when the author says that we "cannot attach objective motor or sensory functions" to the præ-frontal lobes, though we confess we should like a definition of an "objective sensory function," but he thinks we are entitled to conclude that this region of the brain has relation to the faculty of attention. He certainly makes out a good case from the results of experiment and disease, for considering that region of the brain posterior to the præ-frontal (viz., the ascending frontal, the ascending parietal, and the postero-parietal convolutions) to have motor functions and to be followed, when diseased, by motor symptoms. The cases collected from various authors are well worthy of attention by every student of the functions of the brain.

That those cases are selected because they coincide with the author's views as to the localisation of motor centres in the convolutions of the brain does not alter their value, though it may tend to make thoughtful readers of the volume suspend their judgment as to many of the individual conclusions come to, and wait till further facts are adduced, and especially until we have a keen critic who is also psychologically a fearless and self-complacent sceptic like Brown-Séquard, to sift our author's facts and conclusions and confront them by opposing evidence. But granting this, no one can now really doubt the fact of some localisation of function motor and sensory in the brain convolutions, and if motor and sensory, why not psychical? Would that some one would give us a psychical terminology and mode of distinguishing and analysing mental symptoms in disease as simple as the terminology of the motor and sensory lesions! For example, to say that a man has lost the power of attention conveys a very vague idea indeed as compared with saying that he has "brachial monoplegia." The power of attention is essentially similar to a motor act, but we can imagine the power of attention to be either a purely motor act in giving greater tension to a muscle in the ear, or a throwing of some portion of the *corpora quadrigemina* into greater receptive activity, or a hyperæsthetic excitation of a centre devoted to a special sense in a convolution, or an exercise of controlling influence over this last by another portion of brain whose function is inhibitory, or the calling into activity by an act of volition of that brain quality which receives such deep impressions during ideation that the ideas, reasoning, and trains of thought can be clearly remembered afterwards.

The last part of the book is devoted to an account of clinical cases and experiments relating to the functions of that region behind the motor convolutions, the parieto-temporal region, of which the author says—"I claim to have demonstrated the existence of individually differentiated centres of special sense." As might have been expected in so new a field, the cases are not very numerous nor the facts overwhelmingly strong, but many of them are very suggestive, and the opening up of the question of localised centres in the brain cortex for the special senses will direct the attention of clinical observers very strongly to such cases as may elucidate it. The publication of this and Dr. Ferrier's previous work on the "Functions of the Brain" is unquestionably coincident with and will help to create a new era in the study of brain disease, an era of greater scientific accuracy than has existed

before, a new departure on new lines of investigation, and a new stimulus through the fresh fields of discovery that are opened up. The perusal of such a work is especially profitable to the medico-psychologist. It helps to definitise his ideas, to encourage him in his studies as to the co-relations of disordered mental manifestations and brain lesions, teaches him to look for new facts and opens up before his mind a vista of possible discoveries that cannot but incite to good work.

Darwinism tested by Language. By FREDERIC BATEMAN, M.D.
With a Preface by EDWARD MEYRICK GOULBURN, D.D.,
Dean of Norwich. Rivingtons, London, 1877.

This is a small volume of about 250 pages so widely printed that one can read it over in an evening. We do not make this a ground of complaint, for the book might have been even shorter if the author had steadily refrained from unnecessary remarks, and struck out a few pages about the opposition of science and Scripture, and how this is only apparent. Dr. Bateman repeats many arguments against Darwin's theory, but these we pass by, for it does not seem advisable in this Journal to discuss the whole question of the origin of human beings. The gist of the book seems to amount to this—that the author believes that he has an argument to bring forward which is fatal to Darwin's theory of the descent of man. Human beings alone possess the faculty of articulate speech, and this faculty is of such a peculiar and distinctive character as to render futile all efforts to find anything in common between the human intelligence and that of the brutes. Dr. Bateman argues that the gift of language is of an immaterial nature, and distinguishes between the faculty of articulate speech and the general faculty of language without showing that the difference is essential.

The writer of this review is disposed to take the same side in regard to Darwinism as Dr. Bateman; he does not think that Darwin's theory has been made sufficiently probable to outweigh the powerful objections which have been urged against it. At the same time he does not see any irresistible force in Dr. Bateman's argument. It is quite true that all men speak, and no brutes do so; but very likely the Darwinians may reply "We never said that an ourang-outang could be made to talk, as the gift of speech implies a greater intelligence than any anthropoid ape possesses. We believe man to be descended from a series of ancestors whose fossil remains are not yet in our museums, and who were

less intelligent than man, though more intelligent than anthropoid apes, and with one of these speech commenced." We do not see that Dr. Bateman has made out that language is a separate faculty at all. It may be resolved into the principle of association, coupled with the desire innate in man of communicating our feelings and thoughts. Moreover we find the rudiments of language in the higher animals. Dogs undoubtedly understand words. It is true the best educated collie only understands a few; but multiply his intelligence in degree without altering it in kind, and he will understand more. Dogs even make attempts to communicate feelings and occurrences which move them deeply. Here we have the germ of language. Dr. Bateman is consulting physician to the Eastern Counties Asylum for Idiots, and he is no doubt aware that the lower class of idiots neither speak nor understand speech, that as they become more intelligent they understand words without being able to speak, and that as a rule those who are most intelligent both understand speech and speak. Lunatics as they descend in the scale of dementia first cease to speak and then to understand what is said to them.

Observations like these ought to make one hesitate to affirm that there is any impassable line between a mute intelligence and one possessed of speech as Max Müller and some other philologists believe.

Dr. Bateman acknowledges somewhat incautiously that if it could be proved that the power of language was dependent upon the lower end of the third frontal convolution, the deficiency of this portion of the brain in animals and in microcephalic mutes would be a strong argument in favour of Darwinism. He cites a number of interesting cases to show that speech may remain unaffected with the destruction of that portion of this convolution, or even of both frontal lobes.

It certainly seems, although in a large number of cases of aphasia there are lesions implicating the region about the operculum or the Island of Reil, that it is impossible to prove that one particular spot of grey matter is essential to the integrity of speech, but all this leaves the question of Darwinism unaffected. Broca himself, whose localisation Dr. Bateman opposes, is one of the ablest opponents of the Darwinian theory. The evolutionist might fairly hold that the superior intelligence of man along with the gift of speech was owing not to the presence of one convolution, but to the greater number and complexity of many convolutions.

Dr. Bateman's work shows a great deal of research and much

reading. The book is of an interesting character, and not too difficult for the general reader. The preface by the Dean of Norwich is a vigorous piece of writing. Dr. Bateman shows a warm earnestness in proclaiming that science confirms Scripture, which apparently has led to the impression that he wishes to make them support one another, instead of each resting as it must necessarily do upon a distinct foundation. He is at some pains to deny the accusation of using Scripture to refute Darwin. "I use science," he writes, "to show that language is the difference of *kind* between man and animals, which Mr. Darwin seems to stand in need of; and having, however imperfectly, combated his views from a linguistic point of view, I incidentally call attention to the fact that science corroborates Holy Writ."

On the Use of Education and Training in the Treatment of the Insane in Public Lunatic Asylums. By JOSEPH LALOR, M.D., Resident Medical Superintendent of the Richmond District Lunatic Asylum, Dublin. 1878.

This is a Paper read before the Section of Economic Science and Statistics of the British Association for the Advancement of Science, at its meeting in 1878. Those familiar with the work in which Dr. Lalor has been engaged for many years, in the Richmond Asylum, will be prepared to find the author maintaining that education and training form the basis of the moral treatment of all classes of the insane. The readers of this Journal are in possession of the principal facts and figures connected with the schools in this institution, and are aware of the favourable impression produced upon the writer of the account* as to their condition, when visited by members of the Medico-Psychological Association during their meeting in Dublin, in 1876. More attention was directed to, and fresh interest was excited in Dr. Lalor's labours, in consequence of their becoming more generally known, and a stimulus was given to several small schools in operation in our County Asylums. There are those, indeed, who regard the Superintendent of the Richmond Asylum as an enthusiast. If, by this epithet, it is meant that he is inspired by a love† of his work, which will overcome all obstacles, and will triumph over

* "The Richmond Asylum Schools." By D. Hack Tuke, M.D., "Journ. of Mental Science," Oct., 1876.

† "If you would do any good to the lunatic, you must first love him."
—*Esquivol*.

difficulties to which many would succumb, it is, doubtless, very true; but if it is intended to convey the idea that he has taken up a crotchet, and advocates it fanatically, that it is impracticable, and does not merit imitation, we wholly dissent from the designation. We believe that there are few asylums in which the system might not be advantageously introduced, on condition that it is thoroughly instead of halfishly carried out. Several chaplains in English asylums take a warm interest in the subject, and they are able, in this way, to render most valuable help to the superintendent. Their efforts, however, will only very partially succeed, unless arrangements are made in an intelligent manner, and in a liberal spirit by the asylum authorities. To the lack of this we attribute many well-intentioned attempts to introduce schools into institutions for the insane. We rejoice, therefore, that the apostle of this work of educating and training the insane, as well as idiots, has brought the subject before the British Association, and hope that many of those who have the charge of asylums will be induced to do that which the author of this paper is most anxious they should do, visit his asylum and judge for themselves whether the schools are a failure or a success.

The following passages meet an objection, which, to our knowledge, is often brought against the introduction of schools into pauper asylums:—

Schools are alleged by some who admit their practicability and value in the Richmond Asylum to be impracticable in most other asylums, particularly where the patients are of a rude, illiterate, and agricultural class. But it is to be borne in mind that the education and training of the insane is chiefly of use, not for the literary and industrial knowledge imparted, but as supplying the best means of restoring the mind to a healthy state, of teaching habits of good order and self-control, and of relieving the tedium of idleness, and so promoting contentment and even happiness. The ignorant, as well as the educated, present subjects capable of deriving benefit from that moral treatment which skilled education and training alone can adequately supply.

Commending the whole subject to the attention of asylum superintendents, as one which, we believe, would, in the end, lighten rather than increase their labour, and, thanking Dr. Lalor for having given publicity to some of the results of his educational system, we must express, in conclusion, our agreement with the last paragraph of his paper, namely:—

The circumstances in the public asylums in England and Scotland are, I believe, at least equally favourable to the introduction of education and training of the insane of all classes as they are in Ireland; and the advantages would, I feel confident, be equally great.

Handbuch der Geisteskrankheiten von Dr. H. Schüle. (Manual of Mental Diseases by Schüle.)

Von Ziemssen, at the request of numerous medical men, has included a volume on mental diseases in his "Cyclopædia of the Practice of Medicine," and with this concludes his great work. This volume is written by Dr. Heinrich Schüle, the Medical Superintendent of the Baden Asylum, at Illenau.

Without venturing on criticism, we intend to give a short sketch of the plan and contents of his work of 700 large octavo pages.

It is divided primarily into three books, headed respectively—Psychological Introduction, General and Special Pathology.

The short psychological introduction is, we imagine, too metaphysical for the ordinary English medical man, even for those specialists who are pleased to term themselves "psychologists." It is, however, very poetical, as, for instance, when the author says—

In the midst of conscious thought we yield to the pleasing sway of fancy, and at once we are living in a fairyland, called forth from hitherto unthought-of wave-like floating views and images : the smooth mirror of our feelings begins to move, and the ripples rise to waves of mood—the storm has been raised by unsummoned feelings and desires, which had slumbered and now arise ; or the active foundation of our unconscious spiritual existence, harmless and harmonious, announces itself as the suddenly found idea, long sought in vain by the conscious action of the spirit—and now all at once is presented to us as the gift of silent inner consciousness.

The second book, General Pathology, includes about two-fifths of the work. It commences with anomalies of sensation or perception. These are divided into hyperæsthesia and anæsthesia : under hyperæsthesia, we have increased sensitive-ness, as in hypochondria, where, *e.g.*, the heart-sounds annoy the patient. Then comes Anger, and its relative mania, and lastly we have hyperæsthesia of the general disposition. All these Schüle considers as symptoms of diminution of the inhibitory powers of the nervous system.

The negative side of anomalous sensation is only treated in this chapter in as far as it concerns "moral anæsthesia," and is, like the introduction, evolved from the author's inner consciousness to a great extent. In the next chapter he takes up the motor anomalies, and divides them into (1) those of the simplest motor tract ; (2) of the psychomotor region proper ; and (3) of the sphere of psychical motions.

The consideration of number one is reserved for a later chapter, and number two is discussed under two heads—with and without preservation of the psychical quality of expression. The first of these subdivisions includes excessive and diminished action, hyperboulia and aboulia, and is genetically divided from the second, which is made up of organic psychomotor disorders, catalepsy, stupor and tetania. Catalepsy he considers a further stage of aboulia, and made up of two factors, neutralization of the centrifugal will by centripetal irritation and a relapse from consciousness to a dreaming condition. Stupor is the result of general weakness of the cerebral functions, and may come on gradually or very suddenly.* Tetania is the condition described by Arndt—and includes symptoms of motor tension, such as contractions of the facial or other muscles. Catalepsy is distinguished from tetania by the greater intensity of the stimulus in the latter, and by the necessary element of physical “yielding” in catalepsy. All these he classes as atonic conditions.

The third group of anomalies, *i.e.*, the pathological acts, comprises suicide, dipsomania, kleptomania, incendiarism, homicide, and the acts of the morally insane. To all these he attributes “organic motivity,” and points out the force of heredity in these cases, and regards their acts as symptoms of some degeneration, inherited or acquired, in the brain, following, in fact, the example of Krafft-Ebing closely.

The next heading we meet is “Anomalies of Perception or Thought.” These are divided into anomalies of content and of form. For those of content, we have three modes of origin, (a) from general constitutional causes; (b) from special lesions, *e.g.*, heart disease, metritis, and (c) direct cerebral disease, *e.g.*, the ideas of greatness in general paralysis; under (c) too, folie raisonnée is discussed. Anomalies of form, the author divides into four—those of (1) conduction and reproduction; (2) grammatical and logical form of the ideas; (3) of judgment or criticism; and (4) consciousness or individuality.

Taking number one, we find that conduction may be retarded primarily by increased psychical resistance, or secondarily in consequence of general depression; or the course of ideas may be accelerated by a diminution of resistance, or secondarily by increased innervation.

Under the last heading he discusses “dual illusions,” and inclines to the view that they are due to separate action of the two cerebral hemispheres.

* *Vid.* Newington “Journ. of Mental Sc.,” 1875, p. 372.

Disorders of reproduction of ideas result either from defective conduction (bad memory), or confusion of some new perception with the reproduced idea (illusion), or thirdly, from a similar false identity due to deficient critical reproduction.

Disorders in the logical form of ideas are divided into two classes, the first including the cases in which an idea is produced without any connection, and remains rigid and incapable of modification ("Zwangsvorstellung"), and the second includes those in which interrogation dominates over the whole sense ("Zwangsvorstellung in Frageform" of Griesinger). This latter is intimately related with the "folie du doute."

Disorders in the estimation of ideas, may arise from depreciation either of their relative or absolute values. Either all ideas have the same weight, or the type is confused.

Disorders of consciousness of identity assume the form either of change of personality, or of divided personality.

Next in order the author treats of psycho-cerebral and psycho-spinal, and hyperæsthesia, and neurosis of peripheral sensations, which he regards as the connecting-link between the psychical and sensory diseases. The first of these includes such cases where the patient believes himself a wolf, or dead, &c.—due to some alteration (generally central) of sensation.

On the subject of præcordial terror there is a very interesting section, in which the author upholds the vasomotor and inhibited respiration origin of the "terror fits." He describes three varieties:—The first with a tight pressing sensation in the præcordium, he considers to originate from vagus irritation, as indicated by the irregular beat of the heart, and gasping respiration; the second exhibits a thready irregular pulse, and sensation of pain over the epigastrium—a vasomotor reflex paresis of the vessels of the abdomen acting secondarily upon the heart; and the third group including the cases which are connected with intercostal neuralgia.

The next sections of this chapter discuss Westphal's "Agoraphobia," electric and magnetic sensations, headache and the perverted sexual desire. The last class he considers due mainly to some congenital defect, and quotes Westphal, who points out the existence of periodicity and dementia in most of his cases.

Passing on to the peripheral neuroses of sensation, he takes up the sensation of the skin, and gives some very interesting cases in which he tested it with callipers, and found different pathological conditions in connection with various psychoses.

The next chapter is devoted to delusions, which are divided according to Esquirol's example, into Hallucinations and Illusions. Hallucinations he defines with Hagen as "the embodied appearance of a subjectively formed picture in addition to, and simultaneously with, real perception, and of equal force with these." He then dwells upon the shading of strength and form, and finally divides them into (*a*) persistent; (*b*) varying; and (*c*) reflex. Illusions are derived from something objective, but transformed and confused—false conclusions from really objective bases. They are naturally most frequent in the sphere of touch, taste and smell, and are seldom of a pleasing nature. Mixed forms of illusion and hallucination are frequent. After an interesting discussion of the origin and pathological nature of delusions, the author passes on to a statement of his experience of the relative frequency with which the different senses are affected, and, in opposition to Griesinger, assigns the first place to the sense of hearing, the second to optical, the third to tactile, and the fourth to olfactory and gustatory delusions.

The next chapter is divided into three sections on (1) motor, (2) vasomotor, and (3) trophical disorders in mental diseases. Under the first he discusses the muscular tone and hallucinations due to its alterations, and in this connection also speech and writing. Dysphagia he treats under eight different heads, according to the muscles concerned. The author then gives us a very interesting discussion on the condition of the pupils in mental diseases. He considers that no condition of the pupils has yet been proved to be pathognomonic. Convulsions he divides into those—(*a*) in which only a circumscribed muscular area is attacked and consciousness retained, and (*b*) those in which the convulsion is more general and consciousness lost. As the cause of these epilepti-form attacks he supposes a vasomotor cramp. Under the heading of electric changes he details the results obtained by Tiggess. Our knowledge of the vasomotor nervous system has, according to Schüle, made greater progress than any other branch in the last ten years, mainly owing to the spgmographic investigations of Wolff. He asserts that in mental affections the vasomotor system is always, *without exception*, affected. And in connection with this he believes the temperature to be likewise affected.

He accepts Esquirol's statement that in cases of recovery from mental diseases there is a simultaneous improvement of nutrition, which may be estimated by increase of weight. In

the matter of changes in the constitution of the urine he seems to regard Rabow's analyses as conclusive. He then passes quickly over changes in salivary secretion, the skin, exanthemata, secretion of sweat, the nails and hair, and decubitus.

A long section is devoted to the othoematoma, regarding the origin of which the author inclines to the view that there is either a primary or secondary softening of the cartilage, and in addition direct violence. The brittleness of the bones in insane people he holds to be one expression of general nutritive disorders.

In the next chapter we have a discussion of the clinical and forensic definitions of lunacy, and the conclusion is, that "mental diseases are conditions of impaired or annihilated judgment, produced by the impairing force of some cerebral disease, which is either co-operative or lays the foundation, as the case may be." And, arguing from the pathological facts at our disposition, the following general somatic definition is further given. "Mental diseases are diffuse cortical affections, either independent and idiopathic, or else connected with some other disease of the central or peripheral nervous system."

The next section is more of an anatomico-physiological character. The author points out the psychological importance of the hemisphere, and especially the cortical layer, and then criticises the value of the development of gyri, and the weight of the brain. To strengthen the importance he attaches to the cortical region, he adduces Hitzig, Fritsch and Ferrier's experiments. What may be derived in this respect from an histological study of the structure of the brain, is learned from the works of Meynert, Flechsig and Major. Next, attention is drawn to the development of the brain, and to its blood supply.

The last section of the general division of the book, forming nearly its half, is devoted to ætiology. Beginning with the general causes of mental diseases, the author points out the influence of civilisation, which he deduces from the increase of lunacy. The special factors of this "civilisation" to which he accredits this increase are over-population and the rush for money. The influence which civilisation exercises on the whole of society, is exercised upon the individual by excessive and mistaken education. Religious excesses he regards more as a symptom than as cause. As regards the influence of war, he agrees with Jolly in forming a lower estimate of it than was formerly assumed. He accounts for the predominance of female lunatics over male (6·5) by their weaker resistance in

the struggle for existence, and by the negative and positive evils of marriage.

The next point touched upon is the influence of age on the development of mental disease. He begins with a very interesting description of the typical features of the insanity of childhood. This he characterises as essentially a cessation of physiological development, and draws attention to the low form it generally assumes—*e.g.*, convulsions and chorea, “insanity of the reflex centres,” as Maudsley expresses it. Still he recognises higher forms with mania, melancholia and hallucinations. The great majority of these cases he attributes to heredity, but includes amongst the ætiological momenta both acute fevers and cranial injuries so common in childhood.

In his description of the insanity of puberty (16-22 years of age) he follows Kahlbaum strictly, and calls it a “prolonged halt at a certain middle stage.” But at the same time he points out the multiplicity of forms assumed by this variety. To heredity he attributes (with Skae) even more influence than in the insanity of childhood.

The description of Climacteric insanity agrees with that of Skae. As regards the prognosis, however, Schüle’s experience leads him quite to disagree with Merson’s favourable view.

The insanity of old age is characterised as melancholia, marked by intense egotism, and an almost pathognomonic delusion of being robbed or ruined. Mania, when occurring at this age, Schüle considers as an indication of one of his “periencephalitic modifications.” In the last place, amongst the psychoses of old age, he includes primary dementia, but excludes primary monomania.

In discussing the question of the influence exerted by social position in the production of insanity, Schüle points out the great numerical preponderance of poor over rich. He considers that the difference of forms are due to want in one case, and excess in the other. For the former he quotes Hoyd’s statistics, and for the latter he points out the prevalence of general paralysis amongst the rich.

The origin of prison lunacy Schüle finds chiefly due to solitary confinement, and compares it with Le Vaillant’s madness of the desert. He divides it into two stages—the melancholy (70 per cent. curable), and fixed monomania (generally incurable). Delbrück and Gutsch are quoted to prove that the great majority of criminals affected belong to the class of crime with violence, while criminals against property seldom suffer.

The next chapter is devoted to Heredity, which is discussed in a very thorough manner. As regards the form of disease inherited, Schüle says that it is, in the majority of cases, similar in the two generations, especially in the case of suicidal monomania. But he points out the tendency of disease to "degenerate," or assume a more serious form in the succeeding generation.

The danger of heredity is greatest when both parents have been affected, but, when only one is affected, there is more probability of the disease being inherited from the mother than from the father. In direct connection he then points out the progressive (degenerative) nature of the hereditary virus. From a clear and detailed description of the hereditary neurosis, he draws the following general characteristics:—Polymorphism of the clinical form of combinations, periodicity, relatively unaffected intellect, and abrupt commencement and defervescence of the disease. Schüle accepts Morel's doctrine of the connection between crime and lunacy, but modifies it by insisting that the disease of the parents is not necessarily transmitted to their children.

The last section of the general part of the work embraces the special causes of insanity. These are primarily divided into psychical and somatic. Under the former heading mental over-exertion comes first. Next in order, the moral causes, depression and exultation. From a consideration of the mode in which these act, the conclusion is drawn that it is the "sum effect of the vasomotor affection arising from psychical changes, plus cerebral hyperæmia, caused by increased brain work.

Somatic influences are divided into four classes:—(1) Idiopathic, cerebral and spinal diseases; (2) diseases of the thoracic; and (3) abdominal and sexual organs; and (4) constitutional diseases, such as chronic cachexia, or acute fever. But the organic cerebral diseases are reserved for the special pathology, and attention devoted alone to chorea and tabes. Chorea may give rise either to excitement or mania, or we may have melancholia agitata, or, finally, primary monomania. Tabes spinalis is so frequently combined with an affection of the cerebral nerves, that Duchenne considered this one of the most constant symptoms. It often gives rise either to slight dementia, vasomotor congestion, or even general paralysis.

The second factor of the first class is constituted by injuries to the peripheral nerves, whose mode of action must be considered reflex. Schüle notes the benefit derived in such cases

from the local injection of morphia, and excision in the case of scars. Traumatic insanity Schüle divides into primary traumatic insanity, with an acute and a sub-acute form, the acute having all the symptoms of meningitis, and the sub-acute generally going into a condition of primary dementia; and (2) secondary traumatic insanity, which includes cases of progressive idiocy with paralysis, and the very chronic cases of brain affection, generally characterised by extreme irritability as the most notable symptom. Diseases of the ear act, in the causation of mental affections, according to Schüle, by giving rise to leptomeningitis. He records a case of his own, in which all the symptoms of a classical general paralysis were exhibited, and disappeared within a few days of the discharge of a large quantity of pus from the ear.

The influence exercised by heart disease in the production of insanity, Schüle does not consider great. The general form assumed is, he states, depression, with fits of terror. Pointing out the almost invariable gastric, or intestinal catarrh in melancholia, he strongly inclines to attribute considerable influence to the digestive organs. And, in physiological support of his view, he shows that the nervous supply of the intestines and of the arteries of the brain are intimately connected. Diseases of the liver and kidney have not been proved to have ever given rise to mental disease. To genital affections, on the contrary, great importance is attached, and they are divided into (1) those that act by causing general anæmia, including profuse menstruation and leucorrhœa; (2) those which create spinal hyperæsthesia, chiefly masturbation; and (3) those causing primary cerebral exhaustion, corresponding to Maudsley's type of "masturbational insanity."

In his views on the puerperal psychoses, Schüle agrees completely with Ripping.

The second division of somatic influences includes acute fevers, infectious, epidemic, and constitutional diseases, and intoxications.

The first of acute fevers coming under consideration is sunstroke, which Schüle characterises as acute maniacal delirium, generally accompanied by paresis of the extremities, tremulous tongue, and frequently strabismus.

Croupous pneumonia, too, gives rise to mental disorders, especially when favoured by alcoholism. In the early stages of the fever we usually observe mania, in the latter melancholia; but in a few cases we notice nothing till we find a

depressing psychosis after convalescence. Schüle does not consider the prognosis quite favourable; the duration he fixes at from one to three weeks. In the course of pleurisy we find two similar forms of mental disorder, (a) an irritation form, and (b) one of exhaustion.

Acute rheumatism gives rise to a few cases of insanity, two in 1,500 of Schüle's patients. He adopts Simon's distinction of three forms. The prognosis he considers, even after four months' duration, favourable.

Amongst acute infectious fevers typhoid takes first rank, especially in Germany, where it is so frequent and widespread. The influence of typhoid fever on existing mental diseases Schüle is rather inclined to undervalue.

Next, in order, come scarlatina and small-pox, with no very definite clinical characteristics. The prognosis of scarlatinal insanity Schüle finds very unfavourable.

Mental diseases, arising from Malaria, assume one of three forms:—(1) *Intermittens larvata*, where the feverish attack is replaced by the psychosis; (2) melancholia, arising from cachexia; or (3) the rare form of acute delirium with melanæmia.

In his description of the form arising from phthisis, Schüle agrees with Clouston and Skae. To syphilis only a very short space is devoted, three forms being distinguished: (a) hypochondriacal melancholia; (b) melancholy, with monomania of persecution; (c) maniacal attacks, with intervals of stupor.

The general part of the work concludes with an extremely interesting section on alcohol, and the mental disorders arising from morphia, chloral, chloroform, and lead.

We propose, in the next number, to analyse the special pathology.

EDWARD G. GEOGHEGAN.

PART III.—PSYCHOLOGICAL RETROSPECT.

1. *French Retrospect.*

By J. G. McDOWALL, M.B., Assist. Med. Officer, South Yorkshire Asylum.

Annales Médico-Psychologiques. November, 1877—September, 1878.

La Folie à Deux, ou Folie Communiquée. By Drs. Lasègue and Falret.

In this paper, after detailing several cases in which insanity was evidently the result of long and close association with the insane, the authors arrive at the following conclusions:—

1. Under ordinary circumstances insanity is not contagious, and it is rare, even among the insane, for a delusion to be communicated from one individual to another.

2. Insanity only becomes contagious under exceptional circumstances.

3. These special conditions are:—

(a.) In the “*Folie à deux*,” one of the two individuals is the active, the other the passive element. The former is the more intelligent of the two, creates the delusions, and imparts them to the latter, who receives them but slowly, and, generally, after altering them to some extent. In time they agree on all points, and tell exactly the same story.

(b.) To arrive at this condition the individuals must have lived long together, must have led the same lives, shared the same hopes and fears, and have been free from all external influences.

4. All the cases observed have presented nearly identical symptoms, and have only become developed under circumstances such as those described.

5. This variety of insanity is more common among women than among men.

6. The patients may be related, but frequently are not.

7. The chief point in the treatment is the separation of the patients from each other.

8. The second individual recovers first.

9. Very rarely delusions have been communicated by one person to several in his neighbourhood.

Aphasia Occurring in a Patient with Exalted Delusions. By Dr. Marandon de Montyel.

Théophile B., forty-seven years of age, was transferred to the Asylum of Evreux, in 1870. His chief mental symptoms, as indicated by his correspondence, were slight enfeeblement of intellect, and delusions of an exalted character. Four years after admission he suffered

an attack of apoplexy, which left him aphasic and paralysed on the right side. When partially recovered, he was able to understand everything said in his presence, and he began to renew his correspondence, attempting to write with his left hand. He was now found to suffer from agraphia, many words in his letters bearing but a faint resemblance to the words they were evidently intended to represent. The patient was conscious of these errors, and made repeated attempts to correct them, but generally failed to write the word correctly. This symptom gradually disappeared, and two years after the attack was not appreciable, though B. was much more demented. The patient died of chronic enteritis in March, 1877.

After death, over the upper part of the posterior parietal convolution, the membranes were adherent, brain substance being detached on their removal. The frontal and anterior parietal convolutions were free from adhesions. The grey matter generally was atrophied, and the smaller vessels atheromatous. There was no special lesion of the posterior part of the third left frontal convolution. The Island of Reil was normal on the right side, on the left atrophied. The right corpus striatum presented in the extraventricular nucleus, and the outer part of the ventricular nucleus, traces of an old hæmorrhage, a large fibrinous clot being found.

Catalepsy following Acute Mania. By Dr. Lagardelle.

G. A., nineteen years of age, suffered an attack of acute mania, and, during its course, leapt from his window on the third story, but escaped with trifling bruises. He was then removed to an asylum, where, after a week, during which he was restless and noisy, he suddenly became silent and motionless, allowing his head to hang forward, and the saliva to dribble from his mouth. Next morning the symptoms of catalepsy appeared. Pricking with pins was not followed by movement of any kind, and his limbs remained in any position in which they were placed. He was treated by shower baths, and each succeeding day was more easily roused. In the intervals between the cataleptic attacks he was free from mania, and able to describe his sensations during the attack, stating that while he saw that he was pricked, and that his limbs were extended, he suffered no pain, and was unable to move. As the attacks became less intense, the skin responded more readily to friction, and in about three weeks he completely recovered. This cataleptic state differed from that usually described, in that consciousness and memory were retained, while volition was lost.

On the Different Kinds of Remission in General Paralysis. By Dr. Doutrebente.

In the first part of this paper the author insists that mania, or melancholia, occurring in a general paralytic, is a complication, and not a part of the disease. He says: "General paralysis, or diffuse interstitial encephalitis, is a morbid entity, clearly characterised and localised. It matters little if it be accompanied by delusions, exalted

or the reverse. The mania, if it exists, is only a complication, besides, in a large number of cases, the mania is replaced by a simple mental enfeeblement, the presence of which is not absolutely indispensable." General paralysis may descend directly from father to son, but its occurrence in the father does not render the son more liable to other forms of nervous disease.

In the progress of general paralysis there are two periods, that of congestion and that of disorganisation. The former varies much in duration, and, while it lasts, remissions are frequent, and treatment may be of value. The pathological condition, which immediately follows the congestive period, is that of sclerosis, which again is succeeded by disorganisation. The sclerosis is due to proliferation of the neuroglia, this gives rise to pressure on and destruction of the nervous elements.

Remissions may be complete or incomplete, temporary or lasting, a complete lasting remission being recovery. To prove that recovery is possible, Dr. Dontrebente refers to numerous instances in which it has been recorded, and describes twelve cases of the disease which have been under his own care. The longest complete remission noted in any of these latter cases lasted two years and two months.

Lypemania cured by the Voluntary Mutilation of the Genital Organs. By Dr. Solaville.

Joseph R., a labourer, thirty-four years of age, was admitted to the Asylum at Poitiers, in June, 1878, suffering from melancholia. He had hallucinations of sight and hearing, believed that he had killed his wife, and that he must mutilate himself. Six weeks after admission, while apparently much improved, he succeeded in mutilating himself, nearly severing his genitals with an axe. Three weeks later he was much improved, mentally, and in two months was discharged.

The Ecstatic of Fontet. By Dr. Bourdin.

In 1875 there appeared in the "Gazette Médicale de Bordeaux" an article entitled "Etude Médicale sur l'extatique de Fontet," by Drs. Mauriac and Verdalle. The opinions expressed in that article are not shared by Dr. Bourdin, and he criticises them at length, after detailing the phenomena on which they were founded.

Marie Bergadieu, at the age of fifteen, exhibited symptoms of hysteria, at thirty suffered from hallucinations, and at forty-four became ecstatic. The crises of ecstasy were numerous, thirty-seven occurring in less than a year, and were generally predicted by the patient, while great variations in pulse, respirations and temperature were noted during their occurrence. Drs. Mauriac and Verdalle concluded that the crises had long been entirely dependent on the will of the patient for their production, because—

1st. The attack often appeared at the exact time predicted by the patient.

2nd. In the midst of one the patient would arrange her dress according to the rules of decency.

3rd. There was ground to suspect a secret understanding between the visionary and those about her.

4th. Because, as a rule, it is possible to aid or even to induce the phenomena of ecstasy by psychical means, and above all by mechanical procedure.

Dr. Bourdin believes, however, that the attacks were not under the control of the patient, and further that, in the present state of science, it is useless to attempt to demonstrate the nervous lesions on which the phenomena of ecstasy depend.

On the Use of Atropine in the Sialorrhœa of the Insane. By Dr. Dufour.

In this note the use of atropine is advocated in cases where the saliva is secreted in excess and dribbles from the patient's mouth. Three successful cases are recorded. From a-half to two milligrammes of the drug were given daily.

Encephaloid Cancer of the Brain in an Epileptic. Absence of the Right Inferior Parietal Lobule without Ocular Disturbance of the opposite side. By Dr. Clovis Gallopain.

The patient, a woman thirty-nine years of age, entered the asylum of Evreux in May, 1875. She was imbecile and helpless, and for two years suffered attacks of vertigo with twitchings of the facial muscles. She had slight difficulty of speech, and dragged the left leg a little. Sight was good, the pupils were equal, and the movements of the eye normal. In May, 1877, she had several severe attacks of convulsions, and from that time until her death, in October, suffered from cephalalgia, vomiting, drowsiness, and apoplectiform attacks. In August hemiplegia of the right side was noted.

Autopsy.—The right parietal bone presents on its outer surface a projection, corresponding to a depression in the middle of its inner surface. The pia mater at the level of the inferior parietal lobule is thickened and projects in the form of a fluctuating tumour, from which, on incision, a fluid resembling cerebro-spinal fluid escaped, leaving a deep excavation. This excavation occupying the site of the inferior parietal lobule, reaches from the Sylvian fissure back to the parieto-occipital fissure and upwards to within three cent. of the longitudinal fissure. Posteriorly the bottom of the excavation is separated from the lateral ventricle by a membrane 1 or 2 mills. in thickness; while anteriorly it corresponds with the external face of the corpus striatum. The first frontal convolution is very large, while the Island of Reil is smooth and not convoluted. The convolutions undeveloped are the ascending parietal in its lower two-thirds, the angular gyrus and its lobule, and the upper extremity of the first temporal.

On the left side the pia mater is adherent over the second and part of the first frontal convolutions. The first frontal convolution is atrophied, the second is of large size. The Island of Reil is large and presents five convolutions. The lateral ventricle is filled by a

soft, fleshy mass which extends into the third ventricle. On section this growth presents numerous small clots, while its centre is occupied by a firm, yellowish nucleus studded with calcareous particles. The brain substance where the pia mater was found adherent is wasted and disorganised.

In his remarks, Dr. Gallopain calls attention to the fact that while the angular gyrus was congenitally absent on the one side and of only normal size on the other, sight and the movements of the eyes were unimpaired.

On Hæmatoma of the Ear. By Dr. Bouteille.

In this paper Dr. Bouteille expresses the opinion that hæmatoma of the ear is always the result of violence, and that too much importance has been attached to the influence of predisposing causes in its production. He believes that, in mental disorders, its occurrence does not contra-indicate the possibility of recovery.

General Paralysis and Aphasia. By Dr. Cullerre.

M. C., a demented general paralytic, was admitted to the asylum of Auxerre in May, 1877. Seven years previously he had contracted syphilis, and had been unable to submit himself to proper treatment. During his residence in the asylum he suffered several congestive attacks, which were invariably followed by aphasia of a few days duration. The patient was removed by his friends, and no post-mortem examination is recorded.

On Functional Localizations in the various forms of General Paralysis. By Dr. E. Dufour.

Dr. Dufour is of opinion that the varieties of general paralysis and the changes which occur in the course of the disease depend entirely upon the seat of the brain lesions, their subsequent extension and their intensity and importance. In support of his views he relates five cases, and furnishes drawings of the adhesions and atrophies discovered after death.

The first case is that of a man aged forty-two, who entered the asylum of Saint Robert in December, 1877. On admission he was quiet, and suffered from loss of memory. No hesitancy of speech existed, but his pupils were unequal. Six weeks later he gave expression to exalted delusions, and his speech at the same time became affected. Three months later he died of diarrhœa. On removal of the brain the right hemisphere presents numerous adhesions on the third frontal convolution, the angular gyrus and its lobule, also slight scattered points of adhesion on the upper part of the superior parietal lobule and the anterior four-fifths of the first frontal convolution. There are well-marked adhesions on the lower four-fifths of the ascending parietal and fourth frontal convolutions. On the median aspect there are numerous adhesions on the gyrus fornicatus, the anterior fourth of the first frontal convolution, the gyrus hippocampi, and the uncinate gyrus. The convolutions of the lower surface of the frontal lobe present similar adhesions. On the left side, adhesions

very slight over the anterior half of the three frontal convolutions, but more numerous on the superior parietal lobule, the angular gyrus and its lobule, and the first and second temporo-sphenoidal convolutions. On the median aspect adhesions are seen on the anterior two-thirds of the first and second frontal convolutions, on the gyrus hippocampi and on the uncinate gyrus. They are also present on the orbital surface of the frontal lobe.

The second case is that of a man of forty years of age. When admitted he was noisy and restless, and had exalted delusions, his lips were tremulous, and his pupils unequal. He was agile and muscular, and four days after admission fatally injured himself by falling from a tree. On examination of the brain the membranes are thickened and opaque and adherent at many points. On the outer surface of the right hemisphere adhesions are found over the whole of the first frontal convolution, the upper middle part of the second, on the upper part of the second temporo-sphenoidal, and on the whole of the third. The lobule of the angular gyrus is much infected. On the median aspect adhesions are found on the front of the first frontal, on the gyrus hippocampi, and on the fourth and fifth temporal convolutions. On the left side they are seen on the anterior three-fourths of the first frontal, the greater part of the fourth frontal, the ascending parietal, and very slightly on the third and base of the second frontal convolutions, on the lobule of the angular gyrus, and on the second and third temporo-sphenoidal convolutions. The other convolutions are infected. On the median aspect there are adhesions on the gyrus hippocampi and the gyrus fornicatus.

The third case is that of a man aged forty years. On admission he was found to answer with difficulty, his speech was hesitating, he mumbled, the muscles of his face quivered, and his pupils were contracted and unequal. On the day after admission there were involuntary movements of the arms. Four days later he died. The membranes are thick and opaque, and, on the right side, adhere to the base of the first and second frontal convolutions, to all the superior parietal lobule, and internally to the anterior part of the frontal convolutions. On the left side there are adhesions to various parts of the third frontal and to the gyrus hippocampi.

The fourth case occurred in a man of fifty-three. When admitted he was excited and incoherent, and, on becoming calm, was found to be partially demented, and to have hesitancy of speech. Before his death, which occurred eleven months after admission, he suffered several attacks of excitement, each attack being followed by increased dementia. His lips never became tremulous. The membranes are thickened and opaque, and blood is suffused on them anteriorly and at the sides. They are also, at numerous points, very cedematous, presenting a gelatinous appearance, and these points correspond to partial atrophies of the convolutions. There are adhesions over the anterior two-thirds of the first frontal convolution on the left side, and

the convolution has a shrivelled appearance. The frontal convolutions and the angular gyrus have a rosy tint, and the ascending parietal convolution and the superior parietal lobule are wrinkled. There are very slight adhesions scattered over the anterior three-fourths of the first temporo-sphenoidal convolution. On the median aspect there are slight adhesions on and a rosy colouration of the first frontal convolution, and the anterior fourth of the gyrus fornicatus. On the right side there are adhesions on the anterior half of the first, and at the base of the third frontal, also on the third temporo-sphenoidal convolutions. The upper part of ascending parietal is wrinkled, the angular gyrus is injected. On the median aspect there are slight adhesions on the anterior part of the frontal convolutions.

The fifth case is that of a woman aged sixty-four, admitted in a condition of helpless dementia. Four months after admission she had an epileptiform attack, of short duration, the legs, arms, and face being convulsed. She died nine days later, having fractured her femur by falling. The membranes are thickened and easily removed, except over the upper two-thirds of the right ascending parietal convolution, where they are slightly adherent. The frontal sulci, the fissure of Rolando, and the interparietal fissure are enlarged, and the membranes at the corresponding parts are cedematous and gelatinous. This gelatinous condition exists on the median aspect in the neighbourhood of the paracentral lobule, of the quadrilateral lobule, and of the first frontal convolution. The convolutions are atrophied, particularly the first, second, and fourth frontal, the ascending parietal and part of the angular gyrus. All the lesions are more marked on the left side than on the right. There is no atheroma of the vessels.

Annales de la Société de Médecine de Gand, 1876, 1877, and 1878.

The only article specially interesting to English psychologists is that by Dr. Lentz:—

History of the Progress of Mental Medicine, from the beginning of the 19th Century to the Present Time.

For this essay he was awarded the Guislain prize. Though, perhaps, not always correct, it is an excellent epitome of the subject. English superintendents will be puzzled to know the source of Dr Lentz's information, when he writes: "En Angleterre, cependant, quoique l'habitation en commun y soit devenue la règle pour le jour, l'isolement pour la nuit s'y est maintenu avec assez de ténacité pour résister à l'entraînement général, et les dortoirs communs ne s'y implantent que lentement et difficilement." It must not be inferred that he is unjust to us in any respect; on the contrary, he gives England full credit for all that it has done in psychology, in the practical treatment of lunatics, and the administration of Asylums.

The chapter on treatment appears to me specially good, and should be read by all those who vaunt the advantages of medical treatment. I willingly admit that in some asylums a large quantity of medicine is

administered, but that is not medical treatment. When it is remembered that we do not know anything concerning the function of this or that convolution, need it excite surprise that a scientific treatment of mental diseases does not exist? It is quite true that patients recover; so they did a hundred years ago, when they were shamefully treated and drugged in a barbarous manner.

“In order to establish a correct system of mental therapeutics, we must first know all the general or special causes of insanity; distinguish precisely their source of origin; determine whether it is the physical which acts on the mental or the mental which acts upon the physical: recognise the curable varieties, those which require moral remedies, those which need medicines; lastly, determine which require a mixed treatment. ‘To treat insanity systematically, it is necessary, first of all to know its seat and its nature; to consider the nature and mode of action of its causes; to allow for individual tendencies connected with sex, age, temperament.’ Such were the difficulties foreseen by Esquirol and Georget, and which science has attempted to resolve by the aid of the principles of ordinary therapeutics. And when Georget wrote, there is one general principle of therapeutics which must never be forgot, viz., that a function should be in repose and exercised as little as possible when the organ is in a state of irritation; that we must not attempt to divert and fatigue a lunatic by arguments when his brain is irritated, as we thereby irritate it still further, he enunciated one of the soundest maxims on mental therapeutics, and which Guislain afterwards so successfully applied in the treatment of melancholia.

“Such being at present our limited knowledge of the subject, this rational tendency must necessarily end in an expectant form of treatment:—‘It is better to state what must not be done, than to describe the course to be pursued,’ has become one of the great precepts in mental treatment.

“The still too psychological tendency of science, the predominating importance which is still attached to psychical symptoms, as well as the obscurity of the physical lesions, were not long in forcing treatment into a method too exclusively based on mental agencies; and that, not so much by conviction as by necessity. It is easily understood that, in sympathetic or symptomatic insanity, the cause is the principal, the essential indication; but that being too often quite unknown, drove treatment into the sterile and dangerous path of chance and groping in the dark, and they gladly turned to the mental form of treatment, a form always successful, whatever our theory may be about it.

“The asylum at once becomes the real mental medicine, it is an instrument of cure. All efforts are directed to this end; everything is done to develop the organisation and management, and the various forms of mental treatment, or rather of mental hygiene to which the lunatics are subjected, become perfected in proportion to the success of

the administration. This, however, is almost the same as treatment, which is, so to speak, negative, though active. It is not at all that exclusive moral treatment, as understood by Leuret and Reil; that is to say, that influence exercised directly upon the diseased understanding, that influence which the first sought in punishment or reward, whilst he employed the douche; and which the second had chiefly in view, when he employed argument to cure the insane, and desired that in every asylum the physician should have as his assistants a moralist and an idealogist.

“It is to this latter direct, personal influence, that we should reserve the name of moral treatment, all the inconveniences of which have now been sufficiently recognised for it to be employed except in rare cases, and in certain circumstances, such as convalescence.

“The influence of the asylum, on the contrary, is quite otherwise, and, indeed, quite opposed; in place of being occupied with the morbid aspect, it has but one end, that of throwing the diseased into the shade, and of profiting by what remains normal in the lunatic to cure him of his disease. The good effect of the asylum is not limited to merely avoiding injury, by placing the lunatic where his disease may run its natural course towards recovery, free from any obstacle or unfavourable influence; it has besides a much more direct influence; the order, discipline, life in common, classification, work, amusements, and moral influences, which include the various agencies which the asylum brings to bear upon the lunatic, act powerfully against the tendencies which impel him towards solitariness and self-concentration, force him to self-command, and by the contrasts provoked, lead to the most beneficial mental operations.

“Such is the general treatment of the asylum; a treatment which acts only slowly and imperceptibly, and whose continuity of action is the more salutary as it is produced almost unconsciously as far as the patient is concerned.

“In these circumstances, individual treatment is lost, so to say, in the administration of the asylum.

“Thus it results that aggregation is generally a necessity which admits of but few exceptions. It is possible to exaggerate its importance at the expense of individual treatment, which, however, is still little advanced, and rather theoretical than practical.

“It is the same with the administration of drugs, the indications for which still continue very vague, and depend upon the general state of the patient rather than on other circumstances: thus the state of plethora or anæmia, of nervous irritability, feebleness, depression, or of stupor, are chiefly taken into account in deciding on the employment of physical treatment. We are still experimenting, working in the dark; and chance, perhaps as much as known facts, guides the physician in the administration of medicines which he thinks it his duty to give, and which the wise and prudent physician abstains from as much as possible.

“In proportion as asylum organisation is perfected, and the pathological and pathogenic conditions of insanity are better known; in proportion as exclusive theories lose their importance and give place to eclectic doctrines, therapeutics will tend to become more individualised and rational. The progress made in the clinical study of mental disease rests upon the treatment; and at the same time that that morbid entity insanity is replaced by well defined distinct groups, therapeutics receives more precise indications, and draws them, no longer from the predominance of one symptom but from conditions more closely connected with the true nature of the disease.

“The progress of pathological anatomy exercises a very beneficial influence upon scientific mental treatment, and seems full of promise. Not indeed that these researches have as yet furnished many new indications, but they have cleared the ground, and furnished a thread through that labyrinth of unconnected varieties of disease.

“When pathological anatomy has succeeded in dividing the great class of psycho-cerebral disorders into insanity proper, organic insanity and insanity connected with convulsive diseases, the science of treatment has achieved a great step; negative, if you like, in this sense that it has furnished no new fact, but considerable, if one takes into account all the mischief it prevents.

“When pathogeny, aided by the discoveries of pathological anatomy, succeeds in raising a corner of the veil which covers the morbid processes of insanity, and permits us to differentiate the initial phenomena of the disease from those which are only secondary; when, finally, in later times, they have attempted to examine more closely the relations which exist between organic lesions and physical disorders and psycho-cerebral symptoms, and to penetrate into the nature of these latter, therapeutics received at least a more scientific basis if nothing further.

“Treatment is becoming more than ever etiological and individual. ‘We ought to be thoroughly convinced,’ says Griesinger, ‘that what we have to treat is not a disease, but a diseased person; it is not mania, but a person who has become maniacal.’ ‘We ought always to seek carefully for the sometimes obscure connection between the circumstances which have caused the disease. The first indication to be fulfilled is to avoid as far as possible the circumstances which, by their simultaneous action, have led to the development of the disease.’”

We need not reproduce further Dr. Lintz’s remarks on treatment, for they may be shortly summarised: The scientific medical treatment of mental diseases is unknown; all that is done at present by the best and most careful physicians is to place their patients in conditions of body and surroundings least likely to interfere with the curative powers of Nature. We do not cure our patients, they recover.

These views are so contrary to those now firmly held by many

physicians in this country, that I have reproduced them at some length, being convinced of their truth. Unless care be taken, the prevailing system of giving tonics will retard and not hasten the genuine medical treatment of lunatics. All the benefits to be derived from tonics can be obtained from careful dieting, perhaps more slowly, but quite as surely. It is customary to consider this tonic and physicking form of treatment as something quite new, a step in advance achieved during the last few years. Nothing could be a greater mistake. At the beginning of this century tonics, barks, &c., were administered with no sparing hand, and our grandfathers abandoned the whole affair as vanity and vexation of spirit. But some modern physicians seem to be either more sanguine or more credulous, else we could never find a man placing medical treatment, as at present conducted, in the first and hygiene in the second rank of remedial agents.

T. W. McD.

2. *German Retrospect.*

BY W. W. IRELAND, M.D.

The German Retrospect has been made from the following periodicals:—

“Archiv. für Psychiatrie und Nervenkrankheiten.” viii. Band, Heft 1, 2, and 3, and ix. Band, 1 Heft. Berlin, 1877 and 1878.

“Allgemeine Zeitschrift für Psychiatrie,” xxxv. Band, 1, 2, 3 and 4 Heft. Berlin, 1878.

“Verhandlungen der Berliner Medicinischen Gesellschaft,” Band viii. Berlin, 1877.

“Medizinische Jahrbücher” herausgegeben von der K. K. Gesellschaft der Ärzte, Jahrgang, 1877. iv. Heft, and Jahrgang, 1878. i., ii., and iii. Heft. Vienna.

“Psychiatrisches Centralblatt,” from Number 6, 1877, to Nr. 3, 1878. Vienna.

“Correspondenz Blatt der Deutschen Gesellschaft für Psychiatrie und Gerichtliche Psychologie,” Numbers from 8 to 12, 1877. Neuwied.

“Centralblatt für Nervenheilkunde Psychiatrie und Gerichtliche Medicin,” first ten numbers. Coblenz, 1878.

The “Correspondenz Blatt” has been given up, on the death of its distinguished editor, Dr. Adolph Albrecht Erlenmeyer, after having lasted 23 years. The reader, in seeking out references, ought to distinguish between the “Psychiatrisches Centralblatt,” edited by Drs. Gauster and Meynert, and the new “Centralblatt für Nervenheilkunde,” edited by Dr. A. Erlenmeyer. I have availed myself of the excellent *résumés* in the new periodical, where they reproduce matter taken from German journals or books, not in my hands.

The Motor Functions of the Cortex Cerebri.—Dr. Henry Obersteiner discusses this question in a paper in “Strickers Jahrbuch” for 1878 (2 Heft.) He seeks to defend the views of Fritsch, Hitzig, and Ferrier, against their opponents. Schiff measured the time which elapsed between the electrical stimulation of the brain and the consequent muscular contraction. He found its duration from seven to eleven times longer than what would suffice for a simple motor nerve of the same length to conduct a stimulus to the muscle; from which he is inclined to believe that, instead of acting upon a motor centre, we simply arouse a sensation, referred to a particular part, and exciting corresponding motions. Against this Dr. Obersteiner argues that the electrical excitation is probably broken by passing through nerve cells, and that cellular tissues conduct more slowly than fibres.

It has been observed by Hitzig himself that, when the different motor centres have been removed, the resulting loss of muscular sensibility soon passes away, but he has since found that this is not always the case.

Dr. Obersteiner has removed in several rabbits a considerable portion of the cortex, as much as from one-fourth to one-half of the whole surface of a hemisphere, leaving intact the portion of grey matter from which the motions of the fore paw originate, and respecting as much as possible the vascular connections of the spot. He has found that the nervous power of the paw remained undisturbed. On the contrary, where the centre in question is injured, the characteristic symptoms of loss of muscular sensibility instantly appear. On pulling the paw, of which the motor centre has not been destroyed, on the opposite side of the brain, it is quickly and strongly retracted. On the other side the fore paw can not only be stretched out without any voluntary resistance, but retained for a long time in an unaccustomed position. When one takes care to ensure the removal of every portion of the cortex, which is proved by sufficient experimentation with the electrodes to have a relation to movements of the fore paws, this condition remains permanent. Dr. Obersteiner has three rabbits, which were operated upon a year before, and in which the centre for the right fore paw was extirpated in the left hemisphere, and there is no appearance of any other part of the brain taking up the lost function. He quotes with approval Ferrier's remark, that the higher the animal rises in the scale of beings the more numerous and varied are the muscular contractions which can be excited, through the electrical excitation of the hemispheres; and he himself adds that the more the movements are under the control of the will, the more marked is the motor disturbance, after destruction of the centres in the hemispheres. The more a group of muscles is associated in combined movements of the other side, the slighter are the consequences following upon the destruction of the cortex on one side. In the rabbit the tail is rudimentary, and Dr. Obersteiner has never succeeded in exciting motions in this organ by stimulating any part of the hemispheres. In the dog, on the contrary, where the movements of

the tail are under the control of the emotions, there is a well marked spot near the middle line of the hemisphere, from which the movements of the tail can be excited. Dr. Obersteiner believes that we have good grounds, both from physiological experiment and pathological experience, for concluding that the more a group of muscles or a limb is normally subject to the influence of a will, so much the more extensively is it represented in the hemisphere of the brain; and the more a group of muscles or a limb is used, without the intervention of consciousness, as by reflex action, so much the less close is its connection with the hemispheres, and so much the less extensive is the area of its motor centre, and so much the weaker is the physiological influence of the hemispheres upon the part. The fore paw of an animal is much more under the influence of the will than the hind paw. From an analysis of a number of cases, he believes that in man the arms are oftener visited by motor disturbances, following upon affections of the hemispheres, than the leg. It may be objected to such collections of cases as has been made by Charcot and Pitres, Bourdon and Maragliano, as well as by Dr. Obersteiner, that they are, in reality, selected ones, though not to the same extent as the opposing examples of Brown-Séquard. What science wants, however, is a collection of all cases of injuries of parts of the hemispheres, whether the accompanying symptoms be confirmatory, equivocal, or contradictory to any physical theory.

The "Psychiatrisches Centralblatt," for August and September, 1877, gives a *résumé* of the inaugural dissertation in Russian, of Dr. Pasternaki, who has studied the question of what he calls the Psychomotor Centres of the Brain. In his experiments made by laying bare the brains of dogs, cats and rabbits, he only succeeded in finding three centres; those for the fore and hind legs, and those for the eyelids and jaw. These centres were about the size of a pin head. He maintains that at the places where the centres were found, there were collections of cells with seven to fifteen protoplasmic processes, as described by Betz. After extirpation of these centres in some cases, there was a weakness of the corresponding limb, which disappeared in a few days. In other experiments made on cats, no alteration in the motor power of the limbs could be observed. The day after the operation the cats were as active as ever.

The author thinks that his experiments show that the functions of the centres is of a peculiar kind, which he calls psychomotor.

On the Function and Diseases of the Cerebellum.—The following *résumé* of Nothnagel's views on this subject is given in the "Centralblatt für Nervenheilkunde," No. 10. The latency of diseases of the cerebellum is independent of the nature of the morbid process, and within certain bounds even of the extent of the diseased action. It is determined by the seat of the affection. Diseases of one hemisphere are accompanied by no symptoms. Diseases of the veriform process are accompanied by the well-known loss of co-ordinating power.

Nothnagel is inclined to believe that the hemispheres of the cerebellum stand in some relation to the psychical functions. The cerebellum increases in size as one ascends the scale of life. In the birds upon which Flourens experimented, there were no hemispheres, only the vermiform process. Where atrophy of both hemispheres of the cerebellum has been observed, we have always mental derangement.

On the Influence of the Nervous Centres on the Excitability of the Nerves.—Dr. Rumpf ("Archiv." viii. Band, 5 Heft), experimenting on frogs, has arrived at the result that nerves connected with the nervous centres do not respond so readily to the opening of the galvanic circuit as when their connection is severed. The same thing has been observed in two cases of peripheral palsy of the radial nerves. There was an increase of excitability to electricity at the opening of the anode.

Want of Corpus Callosum.—Dr. G. Eichler publishes (in the "Archiv," viii. Band, 2 Heft) a new example of absence of the corpus callosum, a deficiency so rare that, according to Dr. Adriani, not more than twenty cases have been recorded. The subject was a field labourer, forty-three years of age; he was married, and had one child. He was an industrious and well-behaved man, who had passed through life without attracting any particular notice. His wife had never observed anything singular about him. He could read, write and count well. He died of carcinoma of the scrotum.

There were some abnormalities in the base of the skull, the right and left cavities not being of equal size, a condition not very uncommon. The fornix and septum lucidum, along with the corpus callosum, were wanting. In their place was a thin transparent membrane covering the lateral and third ventricles. The commissura mollis was also wanting, and there was a considerable collection of fluid in the lateral ventricles.

The anterior commissure was somewhat larger than usual; the posterior smaller. The convolutions were well developed, but differed from the normal type, as described by Ecker, especially on the under surfaces of the temporal and occipital lobes.

Dr. Eichler remarks: "We can come to the conclusion that not only the corpus callosum, the fornix and soft commissure may be wanting, but also very constant gyri and sulci may be undeveloped, without the mental powers of the individual being deranged in a marked degree, if only the other parts of the brain, especially the other convolutions, are well developed."

The author has observed that the soft commissure is wanting in from twenty to thirty cases out of the hundred. Its function is only a subject of conjecture, but it is clear that its absence does not entail any perceptible mental deficiency.

I have recently had an opportunity, along with Dr. Mann, of examining a brain, at the Stirling District Asylum, where the corpus callosum and fornix were both wanting. The lateral and third ventricles were covered by a transparent membrane, and the lateral ventricles were

very widely distended by a large quantity of fluid. All the other commissures were present. In this case, a woman of thirty-four years, the mental life had been of the feeblest character. It was in fact a case of hydrocephalic idiocy, complicated with deafness and deficiency of the corpus callosum.

Tendon Reflex.—Dr. Westphal at a meeting of the Berlin Medical Psychological Association referred to the knee phenomenon or tendon reflex produced by smartly tapping the tendon of the patella. When this reaction fails, tabes dorsalis, grey deterioration of the posterior tract, was indicated, and it serves to distinguish this affection even at very early stages from cerebral paralysis. On the other hand, there is a group of paralytic insanity where the knee phenomenon is exaggerated, as is also the case in sclerosis of the lateral pyramids of the cord. Dr. Remak had observed the absence of the phenomenon in tabes dorsalis, even in the earliest stages, but he had found that there were cases of tabes associated with degeneration of the lateral pyramid where the phenomenon reappeared.

Dr. S. Tschirjew (in the "Archiv," viii. Band, 3 Heft) gives the result of his researches upon the origin and significance of the knee phenomenon. Dr. Westphal at first thought that he had to do with a reflex action, but abandoned this idea on finding that all other non-mechanical irritations were insufficient to produce it. Therefore he concluded that it was owing to the direct stimulus given to the muscular fibre through the vibration communicated by tapping the patella.

Dr. Tschirjew conducted some very laborious experiments to determine the time in which the muscular contraction takes place. He finds that the contraction begins at the upper fibres of the quadriceps, and not from the lower portion, which would happen if it were the result of mechanical irritation. He has found that the knee phenomenon disappears after cutting the crural nerves. By a series of descending sections of the spinal cord in rabbits, he has ascertained that the reflex action is dependent upon the integrity of the cord between the fifth and sixth lumbar vertebræ, where in the rabbit the sixth lumbar nerve goes off. By destroying the root of the sixth nerve the knee phenomenon ceases. He fixes the centre of this reflex action at the roots where the third and fourth crural plexuses go off. This agrees with what Westphal has observed, that the tendon reflex ceased when the grey degeneration has gained upon portions of the cord. Dr. Tschirjew concludes that the centripetal paths of the knee phenomenon commence in the border between the muscle and the tendon, and pass to the cord through the crural nerves.

The phenomenon of tendon reflex is not confined to the tendon of the quadriceps, though from the position of that muscle the motion is most easily brought out. Every muscle in the body is so connected with the spinal cord that it is not only supplied with centrifugal motor nerves, but also with centripetal nerves which pass by certain posterior roots into the spinal cord.

Dr. Muhr ("Psychiatrisches Centralblatt," Nr. 2) has tested the tendon reflex in fifty-one paralytics and demented. He has arrived at the conclusion that it is present in advanced cases of general paralysis, where there is paralysis of the lower extremities. He has found it entirely wanting six times in fifty-one cases, and these were not bed-ridden nor paralysed people, but walking about with no indications of spinal disease.

He also found the tendon reflex to fail for twelve hours in two men after exhausting debauch; in their usual state of health the phenomenon was present.

Dr. Eulenburg ("Centralblatt für Nervenheilkunde," Nr. 9) made a study of the reflex phenomena of the tendons of the patella and Achillis in 214 children; 17 of these were new born; 14 from two to seven days old; 6 in the second week of life; 3 in the third; 1 in the fourth; that is, 41 in all in the first month of life. Thirteen were in the second month, 10 in the third, 28 in the fourth month, and 122 from five to twelve months old.

All the 17 new-born children showed the tendon reflex of the patella with only one exception; but that in the tendo Achillis could only be distinctly brought out in one case. In the other children born within the first month, the reflex of the patella was quite distinct. Save in one case, the action was generally stronger on one side than on the other. Of the remaining 173 children in the first year of life, the reflex failed only in 7. In the first weeks of life the tendon reflex was much more distinct than later, which the author considers a proof that it is a real result of reflex action. Soltmann has observed that reflex excitability is increased in the newly-born, while the excitability of the peripheral nerves is diminished. The author gives a case where, after section of the crural nerve, percussion of the ligamentum patellæ produced a distinct contraction of the flexors of the knee.

Dr. Schmidt Rimpler gives a case of a patient 34 years of age, who had for a year been afflicted with progressive blindness, owing to amaurosis of both optic nerves. For four years he had been troubled with shooting "rheumatismal" pains in both legs, but was otherwise healthy. He had no symptoms of paralysis or ataxia, or any derangement of sensibility, but the knee phenomenon could not be brought out. In two other cases of the same description it also failed.

Decussation of the Optic Nerves.—In the "Centralblatt für Nervenheilkunde" (Number 5), the question of the crossing of the optic nerves is discussed by Dr. Nieden principally upon pathological observations.

The old view was that there was an entire crossing of the nerves at the chiasma to the opposite side. Gudden, who holds that only a portion of the optic fibres cross, says that the bundle which crosses is on the lower half, and that which does not cross lies above it. There are four pathological observations, all of which favour the view of semi-decussation.

1. Jackson found hemiopia of the left side. The vision in the centre of the eye was good, and the eye seemed healthy under examination. There was hemiplegia with loss of sensation on the left side, and on dissection softening of the right optic thalamus.

2. Hirschberg found typical hemiopia of the right side with normal vision in the centre, and the pupil normal. At a later period there followed aphasia and right hemiplegia, and on examination there was found a tumour of the size of an apple in the left frontal lobe, and the left optic tract in front of the chiasma was thinner than the right.

3. Pooley found hemiopia in the right eye and a tumour in the left occipital lobe, with softening in the left thalamus.

4. Hirschberg observed hemiopia of the right side in an eye apparently healthy, and a tumour was found in the left occipital lobe, with softening in the left thalamus.

Dr. Nieden remarks that, if semi-decussation be the correct view, hemiopia with the lesion of the encephalon on the same side as the blindness should be the commonest form, and the blindness should be sharply limited and stationary without any amaurosis, while the crossed hemiopia should be rarer, not so nicely limited, and progressive. No nasal hemiopia should occur. All these postulates are fulfilled by experience.

Hosch ("Centralblatt für Nervenheilkunde," Nr. 9) described a case where a healthy man had a well-defined hemiopia on the left side of both eyes. After death there was found an apoplectic cyst in the right occipital lobe, with yellow softening of the three occipital gyri and a small spot in the centre of the right optic thalamus. There was a softened spot in the left anterior corner.

In another case, a patient of 54 years of age had left sided hemiopia in both eyes, with weakness of the left side of the body passing in the end into complete paralysis. There was found a cavern extending from the right thalamus through the occipital lobe. The right optic tract was a little smaller than the left.

On a Peculiar Disturbance of Vision in General Paralysis.—Dr. C. Fürstner ("Archiv," viii. Band, 1 Heft; and ix. Band, 1 Heft) observes that not only are there disorders of vision following upon the irregular state of the pupils in general paralysis, but that there are degenerations of the optic nerves which can be detected through the ophthalmoscope during life, and by which the sight is much diminished and in the worst cases destroyed. This degeneration of the optic nerve is found not only in cases in which the typical grey degeneration of the posterior pyramids takes place, but also where there are other myelitic alterations in the other tracts of the cord. Hitzig considers that blindness may be caused by a lesion in the occipital lobe. Ferrier found this result to follow injury of the gyrus angularis in the ape, while Goltz made the loss of vision to depend upon diffused injury to the hemisphere. He gave to this disorder characteristic symptoms which distinguished it from amblyopia and amaurosis.

Dr. Fürstner believes that he has discovered a peculiar disorder of vision in general paralysis, which is not accompanied by any change in the eye as examined through the ophthalmoscope, and which is thought to be dependent upon a brain lesion. It seems to occur for the most part in one eye only, and is thus described :—On fixing the patient's head in a certain position and closing the sound eye, objects such as keys, cups, or knives, when held before the other eye, are not readily recognised ; on their being rapidly jerked to the eye the lids are not closed. The patient stares vacantly at a bright light, brought close to the eye, and coveted objects held before him are neglected. He cannot correctly count small objects heaped together. On being asked to write with the sound eye closed, he begins at a wrong place, swerves from the straight line, carries his writing from the paper on to the table, and runs the letters into one another. With the assistance of the sound eye he can write with tolerable regularity ; when the good eye is closed the irregularity of the gait is increased. All the patients examined, five in number, were so far demented that the result of cross-examination was uncertain, and they could not explain their own sensations. Dr. Fürstner thinks that the confusion in vision could not be set down to fatuity, for there were times when the obscurity of sight disappeared without any improvement in the intelligence ; moreover, the affection may be confined to one eye only. It is not so clear that it could not be explained by assuming a simple dimness of sight with dementia superadded, so that the intelligence is too slow to struggle with the defects of vision.

The author seeks to connect the disease with lesions in the opposite occipital lobe, which were observed in two cases, and are carefully described. No such abnormalities were found in the other cases, where, however, a diseased state of the hemispheres existed. It is evident a good deal of pathological work must be done before the disorders of vision can be studied and connected with special lesions apart from the degeneration of the hemispheres found in general paralysis.

Dr. Reinhard publishes ("Archiv," ix. Band, 1 Heft) what he believes to be an example of Fürstner's new disorder of vision. The subject was a woman of 48 years of age, affected with a progressive dementia, somewhat resembling general paralysis. There were epileptiform attacks and paresis of the face, tongue, and lower extremities. Cysticerci were found in the brain. The disorder of vision appeared before the fatuity was too far advanced to allow of its nature being examined.

Dr. Reinhard defines the disorder to consist in an alteration of the sense of colour, and the perception of form or shape (*Gestaltungsvermögen*), with loss or diminution of the perception of depth ("Tiefenanschauung"), and the knowledge of place or direction. These, however, are symptoms in which the mental faculties are involved as well as mere visual power ; but the discussion of the question would take up more space than can here be claimed.

Amblyopia Nicotiana.—Dr. Saemish ("Centralblatt für Nervenheilkunde," No. 10) has observed in this disorder, which comes upon individuals otherwise healthy, who have smoked much tobacco of the commonest sort, a diminution of the power of vision, generally affecting the centre of both eyes simultaneously, and a central colour blindness, mostly for green and red, with no proportional diminution of visual power; on the contrary, there is an increased susceptibility to light.

There is, certainly, at the beginning of this disorder, no structural alterations in the posterior chamber of the eye, and the defects of vision may disappear if the chronic intoxication brought on by nicotin is eliminated by keeping the patient in the dark.

M. Guéniot states, as the result of his observations—

1. That the amaurosis of nicotin begins always in one eye, and never affects both eyes equally from the beginning. The patient sometimes sees objects yellow.

2. From the beginning the patient sees as in a mist, which gradually becomes more obscure. Along with this mist there exists a central scotoma.

3. There is at first a weakness in the central power of vision, while the peripheral perceptions remain normal.

4. Guéniot had never observed any especial pain or headache. The patients do not see so well towards the evening.

5. The pupils are almost always contracted and immovable.

Guéniot gives the following as the distinctive diagnosis between the amaurosis of nicotin and of alcohol. The amaurosis following the abuse of alcohol, begins in both eyes at once, while that of nicotin is at first always unilateral. In both diseases there is central scotoma, but in the intoxication of nicotin alone are there *muscæ volitantes*. There is pain with the alcohol amaurosis, and the patient sees better towards the evening. The reverse is the case after amaurosis following the use of tobacco. Both diseases may end with atrophy of the papilla, but the amaurosis of nicotin progresses most quickly.

The State of the Retina in Insanity.—The following account, composed by Dr. Nieden, of Dr. A. Schreiber's observations in the "Deutsch Archiv für Klinische Medicin," xxi. Band, 1 Heft, is taken from the fourth number of the "Centralblatt für Nervenheilkunde":—

In encephalitis there is often neuro-retinitis, but not always. The same may be said of abscess of the brain, while in multiple insulated sclerosis, there are often derangements of the external and internal muscle of the eye. In the first stage of hydrocephalus, there is a pretty constant hyperæmic condition of the papilla or optic disc, which may either pass into the stage of congestion, or into that of white atrophy of the optic nerve. Many cases of born blindness, with atrophy of the optic nerve, may be assigned to hydrocephalus internus.

Congestion of the papilla, with numerous tortuous red swollen veins, contracted arteries, and small extravasations of blood, is especially met with in brain tumours. Jackson found this appearance in twenty-three

instances. Of these, seventeen were cases of tumours and three of abscess. In two there was effusion of blood. Heintzel, in fourteen cases of brain tumour, found neuro-retinitis five times, neuro-retinitis with atrophy twice, atrophy of the optic nerves four times, while in three cases there was no brain disease. Annuske, founding upon observations made on forty-three cases, arrived at the conclusion that neuritis-optica is an almost constant accompaniment of brain tumours, while Reich, out of eighty-eight cases, found a proportion of ninety-five per cent. where congestion of the papilla or atrophy followed each tumour. Halms found neuritis in three cases where there was aneurism within the cranium. No relation has been discovered between the character of the neuritis and the situation, size, structure, or growth of the tumours. Galezowski found disorders of vision in 140 out of 344 cases ; in 19 the condition was normal. Of these disorders of vision, 19 had tumours of the cerebellum ; 14 tumours of the corpora striata ; 11 of the frontal lobes ; 12 of the pons ; 6 of some parts of the hemispheres ; and 5 basal tumours. It has been found that the power of vision may be preserved where considerable alterations are detected through the ophthalmoscope. Where the congestion of the papilla is only in one eye, its cause is of an extra-cranial character.

There is little agreement in the results as to the internal condition of the eye in insanity. Some have arrived at a negative conclusion ; others have found hyperæmia, atrophy or neuritis of the optic nerve. Klein found such lesions in 31 out of 134 cases, whilst in 58 cases he remarked a highly characteristic appearance of retinitis paralytica. This retinal affection resembles ordinary senile alterations in the retina, there being a diffuse fine dimness of the retina and optic nerve, with tortuous vessels, and the edges of the eminence of the optic disc or papilla, as it were, submerged. In other cases the retinal arteries in certain spots were wider and of a darker colour, though no disease of the wall of the vessel could be made out. Klein found this appearance in eighteen paralytics, four maniacs, one epileptic, two drunkards, and one patient afflicted with apoplexy, and three with primary insanity. Its occurrence in the retina justifies the suspicion of disease of the brain. Atrophy, congestion of the papilla and retinitis, are not often observed in insanity, nor is there any alteration in the eye characteristic of mental derangement.

In general paralysis the pathological alterations in the retina and optic nerve, and the disorders of vision resulting from them, are the first symptoms of this grievous malady.

In 264 paralytics examined, 182, or 68 per cent. had ophthalmoscopic alterations in the posterior chambers of the eye, while out of 95 maniacs, 55 or 58 per cent., had similar affections.

When the eye is examined during the epileptic fit, there is great anæmia of the papilla and of the other parts of the retina. If examined between the interval of the paroxysms, the veins are observed to be more numerous than usual, and the vessels tortuous.

There is no ordinary affection of sight in epilepsy, nor can any re-

lation be traced between the intensity of the alterations in the eye and the severity of the fits.

Atrophy and neuro-retinitis are occasionally observed in acute and chronic myelitis; in fact the disease of the optic nerve is a common complication of tabes dorsalis, being found in 249 out of 547 cases, *i.e.*, in 45 per cent. Thus, loss of sight through atrophy of the optic nerve, is much more common in diseases of the spinal cord than amongst the insane. In chorea there is occasionally embolism of the arteria centralis retinæ.

The Systolic Cerebral Murmur in Children.—Dr. A. Jurasz, in a pamphlet published on this subject, gives the result of his observations upon 68 children ("Centralblatt für Nervenheilkunde," Probe Murmer.)

1. That the systolic cerebral murmur is only observed in children from the third or fourth month to the fourth and sixth year of their age, and has a close connection with the development of the base of the brain, especially with that of the carotid canal, and probably also with the foramen spinosum.

It seems to be owing to an abnormal narrowness of the bony canal, for the transmission of the growing internal carotid and the meningeal media, until the passage is enlarged by the constant pressure of the pulse of the artery.

General Paralysis with Women.—At a meeting of the Psychiatrischer Verein, at Berlin ("Zeitschrift," xxxv. Band, 2 Heft.), Dr. Jung gives the result of his enquiries into this subject. General paralysis, he observes, is commoner with women than has been hitherto thought. It is commonly stated at the rate of one woman to eight men, the same proportion as Krafft Ebing gives to tabes dorsalis. This is putting it for women too low. General paralysis, especially within the last few years, has prevailed to a great degree with women, as with men of the lower classes, owing to the heightened struggle for existence, and to the increased abuse of coffee and ardent spirits. At the same time there has been an increase almost as great as that of general paralysis in men in the number of demented women. We find in women, after years of dissolute life, with alcoholic and sexual excesses, a used-up fatuous condition, accompanied by paralytic symptoms, not taking the type of general paralysis.

As the result of his observations, Dr. Jung presents the following conclusions: Paralysis in insane females is increasing in the lower ranks. This increase is only an expression of the increasing misery and lack of resistance in these ranks.

It is a disease of the climacteric period, whether this occurs at the normal time or prematurely. It attacks patients who have an acquired or congenital weakness of the nervous system, and a predisposition to vaso-motor disturbances. Heredity has much to do with its production and with its complications with other forms of insanity. It comes upon women at a later stage than upon men. It lasts, on an average, from

one to two years, seldom running a rapid course. In most cases there are delusions, often of an extravagant character, as occurs in men afflicted with the same disease. It is ushered in by a short stage of melancholia. Sexual excess was not found to be an exciting cause either in men or women. The women affected with general paralysis were either childless, or had only one child, or the children were still-born, or died young.

Dominant Ideas.—At a meeting of the Berlin Medico-Psychological Association ("Archiv," viii. Band, 3 Heft) Dr. Westphal delivered a discourse upon "Zwangsvorstellungen; or, Dominant Ideas." He defines these to be notions which occupy the foreground of consciousness against the man's will, and hinder and cross the normal course of ideas.

The person affected, whose intelligence and emotional nature are sound, recognises them as abnormal, but cannot get rid of them, struggle against their predominance as hard as he may. These notions are of a manifold character, and stand in no apparent relation to the other ideas, but seem incomprehensible to the person himself, as if rising from the air. To take an example: a man is beset with the idea that he has written something on paper accusing himself; if he reads about some crime in the newspapers, perhaps he thinks this paper will be found, and he will be accused of it. He sees a bottle on the table, and it occurs to him that it may contain poison and kill some one, or a man broods over the idea that he has written a letter stating what was not true, whereas, he knows after all, that he has told the truth; sometimes the image which haunts the mind is of an obscene character. Delusions, as it were, besiege his mind without gaining belief or vanquishing reason. He knows that the intruding notion is false, but cannot drive it away. The same thought returns again and again with wearisome monotony for years. An instance was given where it lasted as many as eight years. This condition often comes on, and passes away suddenly. Often the person affected is in good bodily health. He cannot be called insane, but his mind is not quite sound. It seems a rudimentary condition which may either return to perfect mental soundness or advance to insanity. In general, the prognosis is good, though remissions are not uncommon. The treatment recommended is change of scene and cheerful society, cold baths, and residence in high and bracing localities.

Dr. O. Berger ("Archiv," viii. Band, 3 Heft) gives the continuation of one of his cases of Grübelsucht, or the metaphysical mania, which Westphal classes under the head of dominant ideas. It seems the same as la Folie de Doute, described by Legrand du Saulle. He concludes from his studies that it may be brought on by mental emotion, and may pass away repeatedly to return. It may last for many years without affecting the intellect.

Dr. Krafft Ebing ("Zeitschrift," xxxv. Band, 3 Heft) treating of insanity, through dominant ideas, finds as common traits in the cases which he has studied, neurotic heredity, or at least neurotic constitution, as shown by a morbid excitability of the nervous centres, the appear-

ance of the disease or disorder before the bodily growth has ceased, the sudden entrance into the mind of strange notions, not associated with the other thoughts. These thoughts, however, are generally congruous with those of others similarly affected, though of the most different character, often turning upon religious doubts, fear of contact, poison, &c., as if the patients had all taken them out of the same romance. Such ideas, though bespeaking an unhealthy mind, very seldom end in insanity. Dr. Krafft Ebing relates four cases where the patients were haunted with ideas and speculations from which they could not escape.

Stammering.—In the “*Zeitschrift*” (xxxv. Band, 1 Heft) there is a *résumé* of the contents of a little book, “*Das Stotterübel, eine Corticale Erkrankung des Grosshirnes von Dr. Jos. Schrank.*” Munich, 1877.

The author believes stammering to be the result of disease of the cortical portion of the brain. It is brought about through mental influences. Speaking requires a succession of acts of volition; but with the stammerer the behests of the will are hindered by anxiety or doubt as to his powers of execution of the words to be uttered. Undue attention is thus thrown upon the special acts of pronunciation. The stammerer is therefore one placed under the influence of dominant ideas, having especial reference to his capacity for articulation. He thus belongs to the same class as those suffering from agoraphobia or ataxia muscularis.

Dr. Schrank rejects Kussmaul's view, that stammering is owing to a born weakness of the apparatus by which syllables are coordinated. If this were so, stammering ought also to occur in reading and singing, which is not always the case.

The author would seek for an anatomical basis of stammering in the parts around the island of Reil, where the so-called motor speech centres have been located. Stammering appears to be hereditary. Colombat found it to be inherited in two-fifths, and Coën in one-fifth of his cases. Dr. Schrank gives an instance where stammering ran through four generations, originating from the mother's side. In those cases where there was no direct inheritance of the disorder, other diseases of the nervous system, such as epilepsy, hysteria, or chorea, were frequently found. The author sees a confirmation of his theory in the treatment which has been found most efficacious in removing stammering. This consists in different devices and exercises to increase the strength of the will, and to diminish anxiety in speaking. Electricity has not been found of any efficacy in the treatment of stammering.

Curative Influence of Mania on other Diseases.—Dr. Snell, at a meeting of the Psychiatrischer Verein of Lower Saxony and Westphalia (“*Psychiatrisches Centralblatt*,” xxxv. Band, 4 Heft), related the case of a female patient, sixty-six years of age, who was brought into the Hildesheim Asylum, suffering from jaundice, hydrothorax and diabetes, so that she appeared reduced to the last extremity. In this apparently hopeless condition, she was seized with a maniacal attack, when her sunk eyes became bright, her languid features took on a lively expression, and her weak voice became strong and resonant. The appetite

became every day stronger, the urinary secretion increased, the watery exudation was absorbed, and in three months the jaundice was completely cured. Maniacal excitement returned three times, and on each occasion had a strengthening influence upon the general health of the patient. Dr. Snell remarks that this is in no respect an isolated occurrence. He has seen a number of chronic diseases removed by maniacal excitement, especially the first stages of consumption, chronic liver disease, gout and rheumatism, failure of digestion and nervous affections of a hypochondriacal, hysterical, or neuralgic character.

It must strike every observer how, at the beginning of a maniacal attack, patients, who had become very relaxed and delicate, would not face a draught, and had to be most careful in their diet, would suddenly defy cold, leave their beds with bare feet and scanty clothing, and swallow all kinds of food without injuring their health. It seems as if, with the mania, they got a new body, new wants, and new capabilities. The respiration becomes strong, the organs of digestion develop a heightened activity, and the voluntary muscles are capable of the greatest exertion.

Dr. Snell knew an official who had reached middle age, and had sunk into hypochondria on account of liver disease and loss of digestion. His physician repeated to him the words of "Mephistopheles" in *Faust*, that the best way to be healthy is to go into the fields to hew and dig.

The distressed patient actually followed this counsel ; gave up all the promises of his calling, bought a little estate, and worked from morning to night like the poorest hind. He is now a healthy and contented man, and has reached a great age. What is marvellous in this case is, that the advice was followed, not that it was beneficial. Several physicians gave instances in other bodily diseases following upon the supervention of insanity.

PART IV.—NOTES AND NEWS.

THE MEDICO-PSYCHOLOGICAL ASSOCIATION.

A Quarterly Meeting of the Medico-Psychological Association was held on Wednesday, November 27th, at the Rooms of the Medico-Chirurgical Society, in Berner's Street, the President, Dr. Crichton Browne in the chair.

Dr. SAVAGE read a paper on the use and abuse of the "Chloral Hydrate."

Dr. BLANDFORD said—That he differed altogether from the views of Dr. Savage. He believed that chloral was a most valuable remedy in the treatment of insanity, nay, he would go so far as to say that the treatment of this disorder was a different thing since the introduction of the drug, and by treatment, he did not mean the procuring of quiet during the day time. His practice was to give chloral solely for the purpose of causing sleep, and so given it was of the greatest service, in his opinion, in numerous cases. One group he might name, patients suffering from acute delirium, where sleep is often altogether absent, and the patient dies exhausted for want of it. Formerly such deaths were not rare. No remedies were of any use ; morphia made matters worse, prevented sleep, and if pushed even produced death by narcotic poisoning. Since chlora

had come to our aid, he had seen no case of death from this kind of delirium. From his experience, however, he had learned that chloral, in combination with other drugs, was more efficacious than when given alone. As the majority of recent cases might be roughly divided into cases of depression and cases of excitement, so he found that the former derived benefit from a combination of chloral and morphia; the latter were sent to sleep by chloral, given with bromide of potassium or ammonium. He had under his care last year, one of the most violent cases of puerperal mania he had ever witnessed. Chloral alone procured no sleep, but half a drachm of chloral with the same quantity of bromide of potassium caused sleep every night to a greater or less extent, and the patient left the asylum cured in eight weeks, which result he believed would never have been attained if all remedies had been withheld. As for the cases mentioned by Dr Savage, in which insanity supervened after chloral had been taken for a long period, it might be doubted whether the disorder was not the outcome of the natural proclivity existing in the patients.

Dr. ROGERS expressed himself as holding views intermediate to those of Dr. Savage and Dr. Blandford. He believed that chloral had a negative effect for good by obtaining sleep, but did not think it had any directly curative action. In delirium tremens he considered it to have the good effects of opium without the evil; the digestion not being interfered with.

Dr. PARSEY considered chloral a very useful adjuvant in the treatment of insanity, but did not believe it to have any directly curative action. He was in the habit of combining it with the bromide of potassium or with morphia. He found that persons who could not take morphia alone, were tolerant of it when combined with chloral. He utterly objected to its use as chemical restraint, as a means of obtaining quietude; that quietude was a bad test of the efficiency of an asylum. The use of such a test offered a temptation for the abuse of chloral.

Dr. HACK TUKE remarked that we could not draw a hard and fast line between the directly curative and the indirectly curative action of chloral hydrate. If it sent a patient to sleep and by that means gave a chance to the *vis medicatrix naturæ* which it otherwise would not have had, then it was useful as a curative agent, although it might not itself cure. In cases of insomnia not in asylums, he had given the chloral with advantage. In evidence that its use might be prolonged without evil effect, he quoted the case of a gentleman, who for several years past had taken twenty grains at bedtime nightly, and had by this means been enabled to attend to his business. It was often a choice of difficulties, either work could not be done or some risk must be run by taking the drug.

Dr. CRICHTON BROWNE believed that the suspicion and disrepute into which this drug had fallen, was due to its unphysiological administration. Its potency must be acknowledged by any one who had witnessed its action in physiological experiments. It acted directly on the higher centres, and might also act as a derivative to the brain by its action on the lower centres. It produced anæmia of the brain, and was therefore contra indicated in melancholia and dementia. The adulteration might also affect its action. In epilepsy he had seen it most useful by injection into rectum, arresting the convulsions and averting after-excitement.

Dr. NICOLSON considered it useful in warding off threatening attacks of insanity, and in aiding the later stages of convalescence from mania.

Dr. STEWART had found that where the chloral had been taken for a prolonged period extreme restlessness, with a mental condition bordering on insanity, had been produced.

Dr. SAVAGE said that sleep was not the absolute cure of insanity, that some of the speakers seemed to think. That sleep might be absent for a long period and recovery follow even more rapidly than where sleep had been obtained by drugs. In his experience in the treatment of disease he had not found chloral produce the effect which, physiologically, should be expected. It required great discrimination in its use. It does injure the appetite, and he had seen

several professional men fall out of the ranks, simply from using chloral to obtain sleep. In his paper he had specially dwelt on the abuse of the drug, hoping that in the debate its uses would be pointed out by those who advocated it.

Dr. SUTHERLAND read a paper on "The Varieties of General Paralysis," especially in reference to Dr. Mickle's groupings of this disease, as given in an article in this Journal for April, 1878.

Dr. W. JULIUS MICKLE—In reference to a point upon which Dr. Sutherland has laid great stress, in the paper just read by him—namely, the *duration* of the general paralysis in the five groups of cases described by myself—I would mention that the duration recorded in each group is the *average* duration of the several cases constituting it; the duration of the individual cases, of course, varying more or less. I do not hold the view, expressed by Dr. Sutherland, that the principal, or possibly the only, useful end to which my paper, in the "Journal of Mental Science," for April last, may be applied is to afford aid in the prognosis of various cases of general paralysis. In the groups I have described the morbid changes varied so much in their locality, extent, relative proportions to each other, and in the final results of the pathological process in the nervous structures, that they may fairly be held to indicate the existence of sub-divisions, or even varieties, of general paralysis, from a pathological point of view. It is only claimed that in my paper a step has been taken towards the establishment of these. The clinical features of the several groups I have described also show considerable differences between themselves. The first group may be taken as a standard with which to compare the other groups, inasmuch as it includes, perhaps, the more typical cases of general paralysis. (Dr. Mickle then described the various groups, and showed how distinct are the clinical features of each.) With reference to the third and fourth groups, and the differences in the symptoms according as the left or the right is the cerebral hemisphere principally affected, I have only stated what I have found. I had no prejudice or theory on the subject, and only became fully aware of the facts after a careful analysis of my cases. The cases belonging to these two groups are not rare, but are *comparatively* infrequent; for the most part the lesions in general paralysis are fairly symmetrical in the two cerebral hemispheres. (The facts of aphasia, and the statistics of Dr. Brown-Séquard, and of Mr. Callender, were then referred to as showing certain of the different pathological relationships of the two cerebral hemispheres; as well as the views of Dr. H. Jackson.) Bearing these in mind, it is not at all incredible that in general paralysis, the symptoms should differ greatly, as I have described, according as the left or the right cerebral hemisphere is mainly affected in that class in which one cerebral hemisphere is very decidedly more diseased than the other.

Dr. CRICHTON BROWNE remarked that general paralysis was, undoubtedly, a pathological entity, the varieties depending on the distribution of the lesions. The varieties, however, cast little light on the treatment of the disease; in the early stages of which, he might remark, that he had found small doses of the chloral hydrate useful.

A paper by Dr. Fletcher Beach, was then read, on "Two Cases of Temporary Aphasia from Shock after a series of Epileptic Fits."

Dr. SUTHERLAND remarked that he hoped the opportunity would not be lost of impressing on the Association the necessity for determining by some exact method the proper medico-legal position of cases of aphasia. Dr. Hughlings Jackson had recently published an essay on this subject, in which he took an empirical or practical view of the disease, in preference to a scientific view, which he intended to refer to in a later paper. Dr. Sutherland referred to the mental gymnastics for healthy intellects, invented by Sir H. Holland, and believed that a similar series of exercises might be applied to cases of aphasia, by means of which the capabilities of the patient might be measured, and his civil responsibility determined. By these means his power of recognizing his friends, his deficiency of memory, his ability or inability to write, to copy

writing, to sign his name, his amount of emotional language, as expressed by pantomime and many other interesting points, could be ascertained, which would materially assist his physician in determining his medico-legal position and capacity.

QUARTERLY MEETING IN EDINBURGH.

A quarterly meeting of the Medico-Psychological Association was held in the Physicians' Hall, Queen Street, Edinburgh, on Thursday, 14th November, 1878. Amongst others present were Dr. Jamieson (Aberdeen), Dr. Clouston (Morningside), Dr. Cameron (Lochgilphead), Dr. Brown (Cupar-Fife), Dr. Inglis (Morningside), Dr. Clark (Melrose), Dr. Fairless (Bothwell), Dr. Ireland (Larbert), Dr. Rutherford (Lenzie), Dr. Brodie (Liberton), Dr. Bower (Saughton Hall), Dr. McLeod (Carlisle), and Dr. McDowall (Morpeth). Dr. Jamieson in the chair.

PATHOLOGICAL SPECIMENS.

Dr. Clouston showed two cases of cancer of the brain—one primary and the other secondary—a case of syphiloma of the brain, with an erosion through the skull cap, and a case of slow atrophy of a large part of the occipital lobe of the right hemisphere from within outwards, leaving a number of single convolutions as detached islets attached to pia mater, and otherwise floating loose in serum, but with the nerve structure normal.*

Dr. McLeod showed a fresh specimen of apoplexy in a syphilitic brain (see Clinical Notes and Cases, p. 617).

Dr. Jos. J. Brown exhibited and shortly described microscopic specimens of a new and hitherto undescribed deposit in the brain, of which he hoped to give a full account at next meeting.

Dr. Clark showed a brain in which there had existed very extraordinary malformations and changes, and read a most careful description of it.†

Dr. Inglis read a paper on two cases of Hystero-Epilepsy,‡ which gave rise to an animated discussion, chiefly as to the case of Simon Fraser, the somnambulist.§

The CHAIRMAN said that this was a paper that might occasion a great deal of discussion. He was utterly sceptical that a metal put on any part of the body should produce such effects. He thought it was wiser to discredit all that (laughter). They were, however, exceedingly indebted to Dr. Inglis, and he did not want to interfere with his belief (laughter). It seemed to him to be insanity to believe that putting metal on certain parts of the body would cure anæsthesia.

Dr. IRELAND said that somnambulism was an extremely interesting subject—entering into some very interesting connections between mind and body. It had thrown much light on the extraordinary state of double consciousness which had certainly been proved to have actually occurred, by the labour and observations of physicians generally. In regard to the case of the man Fraser, that man had had the misfortune to kill his own child, and the question was raised whether he should be incarcerated for life. The decision of the Court was helped very much by the finding of the Judge, that under certain precautions, such as that he should not sleep with any one, he should be liberated. He thought that there were certain grounds for objection to the finding; but if the other alternative had been taken, and the man locked up all the rest of his life as a dangerous lunatic, he must say that the objections would have been stronger. He read the report in the newspapers; and it struck him that, taking it all in all, and taking everything into consideration, the finding was a

* The description of these cases is postponed from want of space

† This we hope to publish in next No. of the Journal.

‡ See "Edinburgh Medical Journal" for December.

§ See October No., p. 451.

merciful and a just one. He was aware that there was room in this case for great difference of opinion. He thought that the connection between epilepsy and somnambulism could not be doubted. He had seen cases of somnambulism, and they were generally united with epilepsy or other neurosis. He had a case of somnambulism that took place during the day, but it did not possess any features of very marked interest. He must say that he doubted the statements about the wonderful effects of metalotherapy. It appeared that they could by means of metal discs remove anæsthesia, and what was more wonderful they could remove disease from the affected to the sound side. Whether that was an advantage or not he did not know, because he thought that patients would be ready strongly to object to this mode of cure. Dr. Inglis found that a bone did as well as a piece of metal. Dr. Hogarth's metallic "tractors" were at one time in great demand, and many other things had been supposed to have some magnetic power when held near a limb. The thing lasted for some time, and got considerably in vogue, till it was shown that bits of painted wood would do as well.

The CHAIRMAN—And tobacco-pipe stoppers (laughter).

Dr. IRELAND said that he was afraid that this discovery would have the same end. He once saw a very remarkable case of somnambulism himself in India, during the siege of Dehli, the result of which might have been even far more disastrous than in Fraser's case, but the details of which he did not think it would be prudent to publish at present, as the person to whom it referred was alive and held a position of some trust. One feature of the case was that the individual was occasionally seized with fits of laughter, and would laugh for an hour at a time.

Dr. CLOUSTON said that he made a careful examination of the man Fraser, and he wished to state his own view of the case, which he gave in the Court, and which was favoured by the Judge. Fraser was a man, as described by Dr. Yellowlees in the October No. of the Journal, of somewhat under the ordinary intelligence; but still he was a man who, in his position in life, had done his work well. He had never attracted particular attention, and he was a social, kindly man, who had made friendships; and the narration by the man himself of the whole circumstances of killing his child, and his obvious honesty in everything that he told connected with it, impressed him very strongly, and made him come to the opinion that it would have been a very hard thing to have considered this man as technically insane, and to have sent him for the rest of his life to Perth Penitentiary. As it seemed to him, the case was one that was not to be considered as technical and legal insanity. While he was conscious—during his waking hours—he was perfectly sane. He only got into an abnormal condition of brain when he was asleep. That it was a morbid psychosis he was not inclined to deny; but that it should take its place alongside the insanities, or that it should be regarded legally as insanity in this particular man, when all the other somnambulists who were liable to do the same kind of thing were reckoned sane, and not interfered with by the law, he did not think was just and right. No one had yet been able to draw any scientific or real distinction between his case and the ordinary somnambulism which is so common at puberty.* Till this was done, Fraser could not be reckoned as insane. If the law had hitherto made no provision for the proper care of such a man, it was not his business to strain theories as to insanity in order to look after him. The Crown Authorities were no doubt anxious that that should be done. They had the safety of the public to look after, and would have been glad to have sent the man to Perth; but it appeared to him, and apparently to the Judge, that it was a straining of the existing law to make him as technically insane, and to have treated him as such. He thought that the close connection that the disease had hereditarily and psychically with epilepsy did not prove that it was that disease or that the man was

* Even Dr. Echeverria in his most able, original and exhaustive Article (Originals, p. 568), has failed to do so.

technically insane. Hysterical girls and eccentric men, for example, did all sorts of odd things, and yet they were not reckoned insane. They were allowed to go at large, and no question was ever asked as to their insanity. He considered, therefore, that he was justified in taking the ground that the man was not technically insane. He was glad that Dr. Ireland seemed to favour that view of the case. It was a unique case, no similar trial ever having taken place in this country. Dr Inglis's two cases had been under his care, and he was much impressed with one of them. There was no doubt that the woman was in a state of somnambulism, and that she got into it from the state of wakefulness without going through the intermediate stage of sleep. That was a striking peculiarity which perhaps was not sufficiently brought out. Such a kind of somnambulism was rare, distinctive and more allied to the conditions of epilepsy than that of ordinary sleep. He very much agreed with the Chairman as to the curious effects of pieces of metal and bone. Anything applied in the same way would have the same effect. These cases must be looked at largely from a psychological point of view. After all, what was anæsthesia itself in those hysterical cases but a subjective phenomenon on the part of the patient? He could not bring it within the compass of any known laws of mind, or physiological phenomena, that those substances should have such an effect as was attributed to them. If they admitted such things to be true, there was no homœopathist, and no theory of the veriest quack that ever lived in this world but what might possibly be accepted. They, as scientific men, he thought, should be very sceptical indeed as to such phenomena except as curious psychological studies. As to hysteric epilepsy, he could not doubt, from what he had seen in the wards of the Charité Hospital at Berlin, that such a condition existed, and also from the cases recorded by Dr. Inglis. But they must look at many of them with reference to the subjective condition of the mind of the patient, and not exclusively from an objective point of view. For many of the facts we were indebted to the sensations and conditions of the patient, and he thought that they should scrutinise them very closely.

The CHAIRMAN said he thought that a man who committed murder in a state of somnambulism was not a man to be allowed to go abroad. If the Judge said he should be treated for his disease, why was he not sent to an asylum? The Judge seemed to think that this was a case for treatment, and the asylum was the place for treating cerebro-mental disease. He could have certified that the man laboured under cerebro-mental disease, and left it to the law to issue a warrant or not. He thought that between Dr. Clouston and the Judge the man had got off (laughter). The one would not make him lunatic, and the other would not make him criminal (laughter).

Dr. McDOWALL said he did not see why a man should be punished for an act which he performed unconsciously.

Dr. RUTHERFORD said that he should be prevented from having the power to do such an act again.

The proceedings then terminated.

OFFICIAL OBSTRUCTION TO MENTAL SCIENCE.

Mr. Cross does not, unfortunately, distinguish between Madame Tussaud's "Chamber of Horrors" and a collection of casts of the heads of criminals taken after death for a scientific purpose. This at least is the only explanation which occurs to us to account for the Home Secretary's instructing his Secretary, Mr. Liddell, to write thus to a gentleman who was refused permission to take a plaster cast of a murderer's head, "I am to add that Mr. Cross has thought it advisable to give directions that the practice of allowing casts to be taken of the heads of condemned criminals should be discontinued." Our eye fell upon this, within a few days of examining the casts which have been preserved in Newgate, and are of great interest. In spite of the many uncertainties of the present day, we thought one thing to be at least certain,

namely, that there was a greatly increased recognition of the importance of the development of the brain, whether in relation to crime or mental defect. But even this belief proves to be an illusion. Anthropology is deliberately discouraged in one of its most important branches—cerebro-mental science. At a time when a really scientific use is made of crania and casts of heads, the Government decides that the supply shall be cut off from one source at any rate; instead of doing what one would have thought a much more likely course to pursue, to make this practice compulsory, instead of depending, as it has hitherto done, upon private effort. We sincerely trust that this embargo upon so legitimate a use of the scientific materials at our disposal in prisons will be removed, and that the study of criminal pathology will not be retarded by so un-called for a prohibition.

If any one requires to be convinced how much interesting work may be done in this field, he should read a paper by Drs. Crochley Clapham and Clarke on "The Cranial Outline of the Insane and Criminal" in the West Riding Medical Reports, 1876.

A propos of the various forms presented by the head in the insane and vicious, the following letter, written by Dr. Conolly, to Dr. D. Hack Tuke, shows the interest which he took in the investigation. It is dated "Hanwell, Nov. 29th, 1845."

"As regards the prognosis in cases of insanity, I think I can point out certain heads which never get well—a low and narrow forehead being combined with a high vertex inclining backward, and a large occiput. The *approaches* to these heads are all bad; often seen in troublesome young people, and *mauvais sujets*. In such cases I find there is frequently an hereditary taint, and that there has been a wayward childhood, some irregular display of talent, ambition greater than ability, and self-esteem enormous.

"We have many incurable cases at Hanwell with well-developed foreheads; and the recoveries between the paroxysms are in these cases much nearer completion than in others; after years of insanity they are not incoherent.

"In an idiot's brain, carefully examined, we found nothing remarkable but its smallness.

"We have several illustrations of a predominant organ with its natural manifestations, as of Veneration, Love of Approbation, Benevolence.

"I have been paying some attention to our cases of *Paralysie Générale*—so much more frequent in men than in women; and common, I suspect, in classes above my poor people at Hanwell. I find that the subjects of this disorder have generally very good heads, and I have not found the malady incidental to the ill-formed, I have vainly attempted to draw.

"If I could some day have the gratification of walking round Hanwell with you, other observations on the forms of the head might occur."

Correspondence.

ERYSIPELAS IN ASYLUMS.

To the Editors of the Journal of Mental Science.

GENTLEMEN,—Had Dr. Phillimore confined himself to expressing the opinion that "the performer of these operations [post-mortem examinations] may communicate a poison which shall excite erysipelas in those predisposed to it," I would have been content to let it pass as being "too ridiculous." He is, so far as I am concerned, at liberty to hold any opinion he pleases. But when he stated that his opinion was borne out by official returns, it became necessary for some one to state the truth, lest uncontradicted error might ultimately be accepted by the careless and ignorant as fact.

In my former letter I tried to show that Dr. Phillimore was not justified in

stating in his last Annual Report that "In the Blue Book of the Lunacy Commissioners for 1877 it is shown that erysipelas has been a fatal and troublesome epidemic in some well-constructed modern asylums. The coincidence between this and the practice of making numerous and indiscriminate post-mortem examinations would seem to point to some close relation existing between the two." Now, so far as I understand his letter in the October number of this Journal, he does not attempt to show that the Commissioners' Report for 1877 gives the slightest support to his assumption; but he proceeds to a general discussion of the whole subject, at the same time bringing forward fresh material in support of his position. He in fact changes his original ground. He now admits that imperfect hygienic conditions predispose to erysipelas, but he still maintains that the "post-mortem poison," whatever that may mean, is the exciting cause. I have much pleasure in meeting him on his new ground.

Bearing on the increased frequency of post-mortem examinations in County and Borough Asylums, Lunatic Hospitals and Licensed Houses, the following figures are interesting. They have been compiled from the Blue Books, and show the percentage of bodies examined after death:—

Year.	County and Boro' Asylums	Lunatic Hospitals.	Licensed Houses.
1871	50·2	23·3	4·4
1872	52·6	33·3	7·
1873	61·1	29·6	12·2
1874	60·4	31·5	17·5
1875	61·7	34·7	17·5
1876	64·9	35·3	21·7
1877	63·7	36·3	18·2

These figures show that the increase in County and Borough Asylums has been small, whilst it has been relatively large in Hospitals and Licensed Houses; indeed in the latter it has been four-fold. Why has there been an increase at all? Let us hope that Dr. Phillimore is mistaken in his suggestion that it has arisen from official pressure. I do not deny the existence of official pressure, and the Commissioners may be entitled to the credit of having compelled some men to assume at least the appearance of interest in this part of their work. But, if it be possible, let us have a higher opinion of our professional brethren, and attribute the result to an increased zeal for scientific research. Of course, I do not wish to be understood as implying that because men make post-mortems they are scientific either in their minds or methods.

In order to get at the truth, I have asked several gentlemen in charge of Lunatic Hospitals and Licensed Houses why it is that post-mortem examinations should be more frequent in County Asylums. The answers may be summarised as follows:—It is quite true that a man desirous of keeping up his scientific knowledge of medicine must study pathology. But he must have opportunity for collecting material, and he must have that material in sufficient quantity. Amongst the better classes there is really no difficulty in obtaining permission to examine the deceased patients, if the medical officer does his best

to obtain it, as in Bethlehem. But most Licensed Houses and the smaller Hospitals are very much like private houses; a death occurs but seldom, the conveniences for an examination are limited, and in the course of time the scientific zeal of the medical attendant dies out for want of fuel, as has occurred in the vast proportion of general practitioners placed like himself. We must rely upon men holding appointments in large asylums for the advancement of our special branch of medicine, just as we do upon the men in large General Hospitals for the chief additions to our knowledge of general medicine. As I once heard my old teacher, Professor Sanders, say, "If it were not for Hospital work, scientific medicine would become extinct."

But to proceed to the much more important question, Has erysipelas increased in frequency in asylums of late years? That surely admits of easy settlement. Any man who can count can give an answer which admits of no gainsay. He only requires to collect Asylum Reports, arrange the statistics for his special purpose, and he has the pleasure of arriving at the truth—the truth after which all truly honest and scientific men seek.

Now this is exactly what I have done. For every year since 1863 I have examined every asylum report within my reach, and I take this opportunity of thanking many of my brother superintendents for their kindness in furnishing me with all the information in their power. I have not succeeded in getting the causes of death in every County and Borough Asylum for every year; still the number is sufficiently large to give results which may be safely relied on. These I have for convenience sake arranged in the following table:—

Year.	Asylum Reports Examined.	Average No. Resident in these Asylums.	Total Deaths from Erysipelas.	Death-rate from Erysipelas per 1,000 of Asylum Pop.
1863	26	11,798	12	1·017
1864	26	12,802	18	1·406
1865	32	14,004	11	·785
1866	33	14,910	8	·536
1867	35	16,583	21	1·266
1868	36	17,538	11	·632
1869	39	21,064	17	·807
1870	39	21,745	15	·689
1871	45	24,435	25	1·023
1872	48	28,022	23	820
1873	51	27,008	25	925
1874	44	28,078	32	1·139
1875	48	24,239	51	2·104
1876	52	31,433	25	·795
1877	51	30,738	22	·715

Do these figures support Dr. Phillimore's statement in his letter "that seven or eight years ago, previous to the crusade in favour of post-mortem examinations, erysipelas was almost unknown or of so little importance as not to deserve recording." Certainly not. Do they indicate any connection between erysipelas and the making of post-mortems? No. If the two stood in the relation of cause and effect, there should have been an annual increase in the proportion of deaths from erysipelas. But this has not occurred. Let us view the subject from another point. I have prepared a table, but from its great size it need not be reproduced here, to show the annual number of deaths from erysipelas in each asylum. This table proves two things: that erysipelas occurs most frequently in the older asylums, and not in the recently built ones; and that post-mortems may be made in every case of death, and erysipelas scarcely be seen. In the Cumberland Asylum post-mortems are made in every case, by order of the Secretary of State, and yet only one case of erysipelas has proved fatal since 1861. The same is true of this asylum, Northumberland. It has been open since 1859. Post-mortems have been made in all cases where the permission of the friends could be obtained, and yet only one death has resulted from erysipelas in all these years. Occasionally erysipelas has appeared as an epidemic in some asylums. Where possible, I have consulted the annual report of the Medical Superintendent, and have found that the disease disappeared when certain sanitary defects were remedied.

Such being the facts, it becomes unnecessary for me to discuss the various conclusions Dr. Phillimore has arrived at from his insufficient premises. A puerperal woman is one person, a lunatic is another; except that they are human beings I see no similarity between their conditions. If the "post-mortem poison" is so deadly, how is it that any woman delivered of a child in an asylum survives? On questions relating to puerperal septicæmia I would refer Dr. Phillimore to modern as well as "great" authorities.

When he says that "it may be taken for granted that erysipelas may be the result of post-mortem examinations, either directly or indirectly," he begs the question in dispute. To prove this new and extraordinary proposition, this, if true, marvellous discovery, he must produce evidence. When this appears, I shall have great pleasure in examining it, and in communicating the results to you.

I really do not deem it necessary to discuss the general question of post-mortems being made by the medical officers of asylums. That was settled long ago, and I am quite sure that a miracle would fail to show Dr. Phillimore that he is wrong. His position recalls to me two axioms of Rochefoucauld, "*C'est plus souvent par orgueil que par défaut de lumières, qu'on s'oppose avec tant d'opiniâtreté aux opinions les plus suivies: on trouve les premières places prises dans le bon parti, et on ne veut point des dernières.*" "*La petitesse de l'esprit fait l'opiniâtreté, et nous ne croyons pas aisément ce qui est au delà de ce que nous voyons.*"

One gratifying result of this correspondence is the proof that asylums are exceedingly satisfactory in their general hygienic arrangements. In each 1,000 of their population only 1 death per annum is due to or accelerated by erysipelas.

I am, Gentlemen,

Your obedient Servant,

T. W. McDOWALL.

County Asylum, Morpeth,
13th November, 1878.

Appointments.

ATKINSON, Dr. J., has been appointed Assistant to the Resident Medical Superintendent of the Sligo Asylum, vice McMunn, resigned.

LAWSON, R., M.B., C.M., has been appointed a Deputy-Commissioner in Lunacy for Scotland, vice Sibbald, appointed a Commissioner.

MERSON, J., M.D., C.M., has been appointed Medical Superintendent of the Hull Borough Lunatic Asylum, vice Wallis.

PHILIPPS, S. R., M.D., has been appointed Medical Superintendent of Wonford House, Exeter, vice Lawson.

PLAXTON, J. W., M.R.C.S.E., L.S.A.L., has been appointed Medical Superintendent of the Lunatic Asylum, Ceylon.

WALLIS, J. M. A., M.B., L.R.C.P.Ed., has been appointed Superintendent of the Lancashire Lunatic Asylum, Whittingham, vice Holland, resigned.

WILLIAMS, C., F.R.C.S. Ed., has been appointed Consulting Surgeon to the Norfolk Lunatic Asylum, Thorpe, vice Frith, deceased.

[We regret that, owing to the pressure on our space, we have been obliged to postpone the publication of several Original Articles, Clinical Cases, and other matter.]

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